Volume 5
Issue 3

RISC USER

January/February 1992
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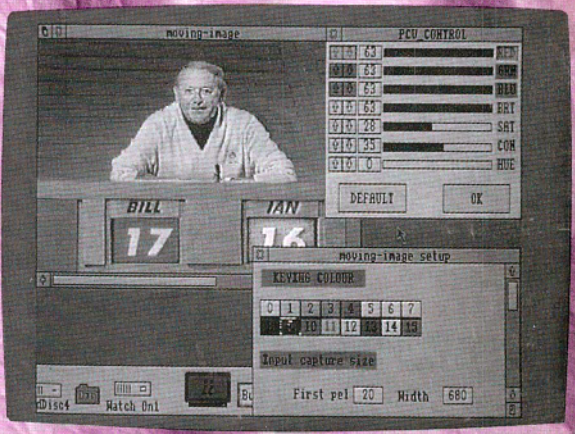
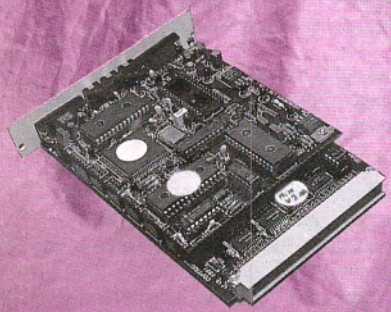
RISC OS 3 Basic

Customised Artwork with smArt

Exploring UNIX on the Arc

Pinpointing Your Data





Video on Your Desktop

The magazine and support group exclusively for users of the Archimedes

ISSUE 3
VOLUME 5
JANUARY/FEBRUARY 1992

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RISC USER

THE ARCHIMEDES MAGAZINE AND SUPPORT GROUP

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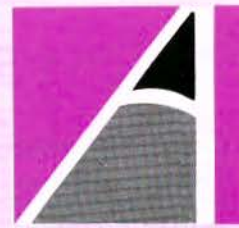
EDITORIAL



Back in late November of last year, I was privileged (though I can think of some who might use a different word here) to represent RISC Developments at an Acorn Roadshow. If you are unfamiliar with this event, I will try to describe briefly what it is. Put simply, a coachload of people representing some 25 software houses and hardware developers, accompanied by a vanload of Archimedes and other equipment, travels around the country for a week, setting up a series of one day exhibitions aimed primarily at the educational market. If you, reading this, were one of the many teachers and advisers who attended one of these events, then I hope you found the experience well worthwhile. I certainly did.

For my part, I found it very satisfying to be able to demonstrate RISC Developments' growing range of products, and particularly to hear the views and comments of teachers and other educationalists. Clearly there is a lot of enthusiasm for the Archimedes, and for the growing range of software available for that system. This was undoubtedly the most successful Roadshow yet, and bodes well for the future of Acorn's computers in education (and for third party hardware and software developers).

Travelling around the country in this way also reveals the startling disparities in computing provision between one part of the country and another, indeed between one school and another. For example, one school had recently installed 300 Archimedes computers and was now looking for software; another explained to me that the £475 which RISC Developments charges for a site licence on Ovation was 1.5 times their school's annual IT budget. Such huge variations are worrying.

However, the enthusiasm with which schools are using computers, with all age groups and with all abilities, convinces me that the state of educational computing in the UK is very healthy indeed. This is further confirmed from occasional reports from other parts of the world, where the capabilities of the Archimedes and the software which runs on it are far and away ahead of the practice on other machines (the experiences of the recent successful foray by Acorn into Canada illustrates this well).

All this leads on neatly to the BETT 1992 show at the Barbican at the end of this month. BETT is traditionally seen as the showcase for the application of technology in education, and Acorn and supporting developers usually account for a major part of this exhibition. I can tell you that several software houses are working on projects which they hope to unveil at this event, and following the hugely attended BBC Acorn User Show last October, and the successful Roadshow in November, BETT (at least from the viewpoint of the Acorn market) appears to have much to offer. RISC Developments will have a stand for the display and demonstration of its own products. We can provide free entry tickets to BETT 1992 for any readers who require them if you send a stamped addressed envelope to RISC Developments clearly marked BETT 1992. I look forward to seeing you there.
M.W.

• News • News • News • News

ARMEN SOFTWARE

A new name in Archimedes software has emerged. Armen Software is a subsidiary of Oundle Edutech Ltd, associated with Oundle School. The first product, which was scheduled for release in December, is *WindowEd*, described as a multi-document template editor. This allows up to eight template files in memory at once. WindowEd will cost £35.00. For more information contact Armen Software, Laxton House, Milton Road, Oundle, Peterborough PE8 4AQ, tel. (0832) 273444.

CUSTOMISED ORDERING FOR CLIP ART

DEC_dATA is the name of an organisation offering a customised service allowing users to purchase individual clipart, image and data files through the use of special catalogue software on disc. For more details, and a catalogue disc, contact DEC_dATA, 60 Danes Road, Exeter EX4 4LS.

PIRATES AHOY

***Pirates* is the new swashbuckling adventure game from educational specialists Chalksoft. This is a completely rewritten version of an educational adventure game originally released for the BBC micro. Intended to provide help with Key Stage Two work in geography and mathematics (for children aged 8 to 14). Pirates costs £23.00 (plus VAT). Chalksoft Ltd. are at P.O.Box 49, Spalding, Lincs PE11 1NZ, tel. (0775) 769518.**

ALL FORMATS COMPUTER FAIRS

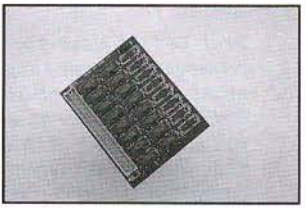
Further All Formats computer fairs have been arranged as follows:

Jan 11	**Motorcycle Museum, opp. NEC Birmingham**
Jan 12	**University Sports Centre, Leeds**
Jan 18	**Horticultural Hall, Westminster**
Jan 19	**Brunel Centre, Bristol**
Jan 26	**City Hall, Candleriggs, Glasgow**

All fairs run from 10am to 4pm, admission £4. For further details, tel. (0926) 613047.

RAM UPGRADES FOR THE A5000

Within weeks of the launch of the new A5000 by Acorn, several companies announced plans for RAM upgrade boards. Atomwide is offering upgrades to either 4 Mbytes (at £129.25 inc. VAT), or to 8 Mbytes (£468.82 inc. VAT). Both upgrades should now be available.



RISC Developments has also produced an A5000 RAM upgrade to 4 Mbytes using the latest surface-mounted technology on a board measuring just 104mm x 80mm. The board is designed to be fitted by the user (total fitting time just 15 minutes), and is priced at £109.00 ex. VAT.

Atomwide are at 23 Greenway, Orpington Kent BR5 2AY tel. (0689) 838852, fax (0689) 896088. RISC Developments are at 117 Hatfield Road, St Albans, Herts AL1 4JS tel. (0727) 40303, fax (0727) 860263.

LATEST ACORN PC EMULATOR

Acorn has announced a new version (version 1.70) of the multi-tasking PC Emulator. This is in two variants, one for use with DR DOS (product code AKA48), and one for MS-DOS (AKA45). For MS-DOS users, version 1.70 contains modifications over version 1.60 so that it will run on the new A5000. Acorn says 1.60 users are otherwise unlikely to benefit by upgrading. For MS-DOS users, upgrading from version 1.60 costs £17.62 (inc. VAT), from earlier versions of the PC Emulator £34.07 (inc. VAT).

For DR DOS the upgrade (code AKA45) includes both version 1.70 of the Emulator and DR DOS 5.00 (a step forward from version 3.41 supplied previously). The upgrade price for this version is £45.82 (inc. VAT), the higher price resulting from the DR DOS 5.00 licence fee, according to Acorn.

In all cases, to obtain an upgrade, send your original PC Emulator disc (only) together with cheque/postal order payable to 'Acorn Direct' for the correct amount (and your name and address, of course) to PC Emulator 1.70, Acorn Direct, 13 Dennigton Road, Wellingborough, Northants NN8 2RL. For AKA45, users should also submit their DR DOS registration number.

Despite all these efforts on Acorn's part, there still appears to be a small bug in the PC Emulator (even version 1.70) relating to floating point arithmetic. Acorn says it is aware that there is a problem, and is working on a solution.

A5000 ARRIVES

By mid November reasonable numbers of Acorn's new A5000 began tp appear, and unlike the earliest models, these all contain RISC OS 3 in ROM, rather than in the more expensive EPROMS with which the earliest machines were fitted. This implies that Acorn is now satisfied with the A5000 version of RISC OS 3, and this in turn should help with the release of a RISC OS 3 upgrade for existing machines, though this is still not expected until

the second quarter of this year (1992). The A5000 system with various special offers is available from Beebug Ltd., 117 Hatfield Road, St Albans, Herts AL1 4JS, tel. (0727) 40303, or contact your local dealer.

BETT 1992

The 1992 British Education and Training Technology show (to give it its full title) will take place at the Barbican Exhibition Centre from 22nd to 25th January 1992. This show provides a showcase for all that's best in educational computing, and is often used by software and hardware developers to demonstrate forthcoming products. RISC Developments will have a stand at BETT92, at which all our latest hardware and software for the Archimedes will be on show, together with RISC User magazine. For more information on BETT92 and advance tickets, telephone 071-404 4844.

ARM3 PRICES DOWN

Aleph One has announced a major price reduction on its ARM3 upgrade. The price is now just (£292.58 inc. VAT). Aleph One states that its ARM3 upgrade is the only one to have been tested and approved by Acorn for use in the A3000, and that fitting the device does not therefore invalidate Acorn's guarantee. Aleph One levies an additional charge of £35 for fitting and testing the ARM3 upgrade to a user's machine. Contact Aleph One Ltd., The Old Courthouse, High Street, Botisham, Cambridge CB5 9BA, tel. (0223) 811679.

Watford Electronics are another with a competitively priced ARM3 board, matching Aleph One's £292.58 price. Watford also charge a £35 pound fitting fee. WE are at Jessa House, 250 Lower High Street, Watford WD1 2AN, tel. (0923) 37774, fax (0923) 33642.

ACORN FILETYPE ALLOCATIONS

As most readers will be aware, many applications make use of *Filetypes* by which RISC OS can distinguish one type of file from another and determine what action to take when the user double-clicks on the file's icon (see Into the Arc in this issue). Acorn has announced a revision of filetype allocations in order to make more available for future applications. It is proposing that filetypes should, in future, conform with the following:

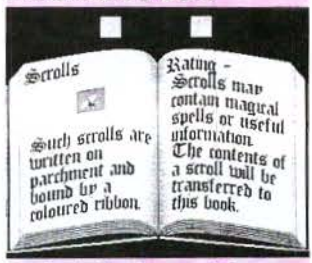
&000-&0FF	User's own non-distributed software
&100-&3FF	User's distributed software, with registration by Acorn (for use with PD software etc)
&400-&7FF	Re-allocated as an overflow area for developers
&800-&DFF	Increased allocation for developers
&E00-&FFF	Acorn's own use

Acorn are also requesting all software developers to ensure that their products are registered with Acorn to ensure uniqueness of names, and correct use of filetypes where appropriate.

TOWER OF BABEL

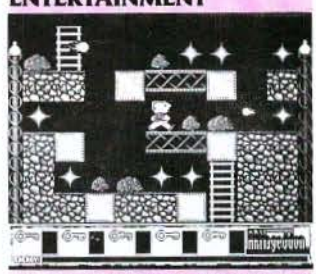
Latest game to arrive from Cygnus Software is Tower of Babel, loosely (and I mean loosely!) based on the Biblical legend. The tower has been colonised by robot spiders who must be helped to return to their home planet of Zantor. Far fetched the outline maybe, but this offering from Cygnus costing £29.95 inc. VAT, appears to have much more to it than may initially meet the eye. Cygnus

PANDORA'S BOX


Scrolls
Such scrolls are written on parchment and bound by a coloured ribbon.
Rating -
Scrolls may contain magical spells or useful information.
The contents of a scroll will be transferred to this book.

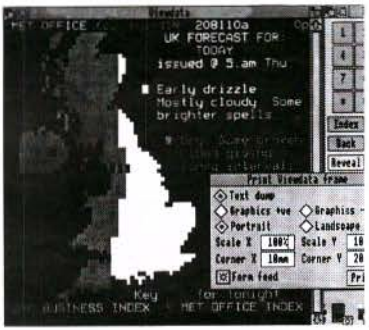
Pandora's Box is one of three new games being released by The Fourth Dimension. Pandora's Box is described as a 'state of the art' arcade adventure combining classic puzzles and full-blooded arcade action. Chopper Force is an advanced helicopter simulation in which you undertake hazardous missions in the future of 2023. Lastly, Enter the Realm is an 'arcade quality adventure' using 50 frames/sec scrolling, animation and movement. Enter the Realm and Pandora's Box should be available now, both priced at £24.95 (inc. VAT). Chopper Force is scheduled for release in March, but no price was available at the time of going to press. For more information contact The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU, tel. (0742) 700661.

ATOMIC ENTERTAINMENT

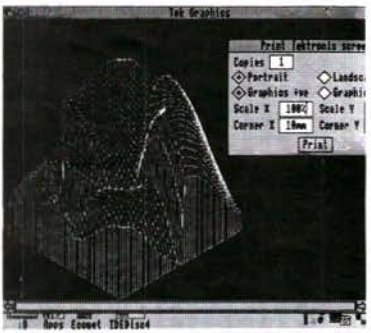


Atomic Software is another new software house to appear in the Acorn market, this time addressing the leisure interests of Archimedes users. The first two releases are Bobby Blockhead vs The Dark Planet, a platform game based on a classic sixties B-movie theme, and Aggressor, a futuristic shoot-'em-up

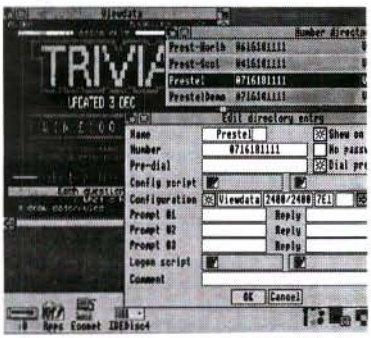
VT320/VT102/VT52/ANSI Terminal



Viewdata Terminal



Tektronix 4105 Terminal



Auto logon number directory

THE MOST ADVANCED COMMUNICATIONS PACKAGE FOR THE ARCHIMEDES, A5000 & A3000 SYSTEMS

Hearsay II

- Fully RISC OS compliant
- Multi-tasking, including background file transfers
- VT320, VT102, VT52, ANSI and Teletype scrolling text terminals
- Viewdata and Minitel (CEPT 2) terminals
- Viewdata editor, telesoftware downloading and frame tagging
- Advanced Tektronix 4105 colour graphics terminal using Draw file format
- Scalable terminal windows in all screen modes
- Xmodem, Xmodem1K, Ymodem, Zmodem, Kermit, SEAlink and ASCII file transfer protocols, including batch transfers
- Campus 2000 terminal
- Comprehensive script language based on a subset of C
- User menu may be customised for special applications
- Macro processor and fully definable keyboard
- Support for RISC OS printer drivers
- Number directory with auto logon and password protection
- MNP 2 and Vasscom link level error correction
- Modem drivers for most popular modems. Additional drivers may be written in the script language and added to the system
- Facility to automatically record logon procedures
- Supplied with a 200-page ring-bound user guide

Members price: **£67.50** + VAT + £3.10 p&p
Total: **£82.41**

Upgrade from Hearsay 1
Upgrade includes new package, user guide and discs. To upgrade, please return your original Hearsay disc only.
Price: £35 + VAT + £3.10 p&p
Total: £44.22

RISC developments

RISC Developments Ltd.
117 Hatfield Road, St. Albans,
Herts. AL1 4JS
Tel: (0727) 40303 Fax: (0727) 860263

• News • News • News • News

Software Engineering Ltd., 11 Newarke Street, Leicester LE1 5SS, tel. (0533) 559711, or from all good Acorn dealers (including Beebug Ltd.).

HAWK V9 DIGITISER PRICES DOWN

Wild Vision has announced price reductions on its Hawk V9 real-time colour digitiser to just £233.83 inc. VAT. The card has been recently upgraded, and the software re-issued. The interface is also available for the A3000 (when installed in Wild Vision's A3000 expansion box) for a combined price of £326.65 inc. VAT (the expansion box on its own is £163.33 inc. VAT).

For more information contact Wild Vision at 15 Witney Way, Boldon Business park, Boldon Colliery, Tyne & Wear NE35 9PE, tel. 091-519 1455, fax 091-519 1929.

SCHEMING MICE

Clares has recently announced a new version of its Schema spreadsheet package for the Archimedes. Clares says that the new version has many enhancements requested by users and 'corrects' some things with which users found difficulty. Updated discs and an addendum have been dispatched to all registered users, and all old versions sold will be immediately updated on receipt of the registration card.

For those with mice which have seen better days and now need to be put out to rest, Clares has available a replacement at just £32.00 inc. VAT. Clares' mouse certainly looks very smart with its ergonomic design, but we have found some problems with the sample sent for our evaluation as a result of the close proximity of the three buttons when in use. Mis-clicks can all too easily arise. However, it looks good, works well and is not expensive, so practice may well iron out any initial problems.

For more information on all Clares products write to Clares, 98 Middlewich Road, Northwich, Cheshire CW9 7DA, tel. (0606) 48511.

MORE SOLUTIONS WITH OAK PCB

Oak Solutions is another company to announce a PCB design package for the Archimedes (see CADmust from Lingenuity - News pages RISC User Volume 5 Issue 1). OakPCB comes with a comprehensive Toolbox which provides many of the features found in Draw as well as tools specific to PCB design. Hardcopy is produced via RISC OS printer drivers, or via the supplied plotter driver. Two comprehensive libraries are included covering virtually every type of electronic component needed. OakPCB costs just £176.25 inc. VAT.

Oak Solutions Ltd. has also moved to new, larger premises at Suite 25, Robin Enterprise Centre, Leeds Road, Idle, West Yorkshire BD10 9TE, tel. (0274) 620423, fax (0274) 620419.

MUSICAL NOTATION

Educational software house Longman Logotron has released another Archimedes application, *Notate*, a standard notation music package for just £69.33 inc. VAT. Notate is a music composition program for creating scores with up to eight parts. Notate is able to render any stave of the score in a range of voices, including sampled sounds, while providing a full range of conventional music notation features. The package also permits both import and export of MIDI format 1 files between packages. Longman Logotron is at 142 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. (0223) 425558, fax (0223) 425349.

game. Both games retail at £19.95 direct from Atomic Software or from all good dealers. Atomic Software are at P.O.Box 118, Peterborough PE1 5QH.

ETHNIC BORDERS

4mation, originators of the popular Poster package for the Archimedes, has released Ethnic Borders, a collection of 43 borders for use with Poster. Inspiration for the work has come from many sources, but there is a strong influence from Maori and other traditions from the author's native New Zealand. Ethnic Borders costs £11.75 inc. VAT from 4mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. (0271) 25353, fax (0271) 22974.

TWILIGHT

Leaving your monitor switched on with the same static display can lead to damage to the phosphor of the screen. Twilight is a new product from The Really Good Software Company which will dim the display to invisibility, restoring the display as soon as the mouse is moved. No price has yet been announced, but further details are available from The Really Good Software Company, P.O.Box 60, Ashton-under-Lyne OL5 9LD.

NEW BULLETIN BOARD FOR BRISTOL

Nightingale BBS is a new Archimedes-based bulletin board operating in Bristol. Its particular theme is nursing/medical (with restricted access to approved professionals only), but there are also areas of general interest to most enthusiasts. The service operates on (0272) 535962 (24hrs) using v21/v22/v22bis/v23/v24bis/MNP5. The Sysop is Paul James.

ChartWell

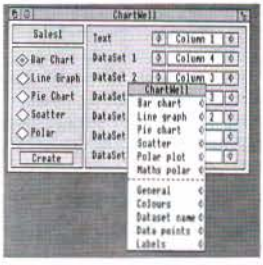
A sophisticated Graph and Chart Package at an affordable price

ChartWell offers **24 different graph types** including:

horizontal and vertical bar charts,
line graphs,
scatter charts,
polar plots,
and pie charts.

A single chart or graph can **display up to 6 different data sets**, including up to six pie charts in a single display.

An added option is proportional sizing, segment withdrawal in pie charts, labelling etc.



Data can be imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

Output is in standard Draw format for import into Draw or any other application, DTP for example.

ChartWell allows a variety of **display options :**

flat or 3D bar and pie charts,

user choice of angle for 3D pie chart display,

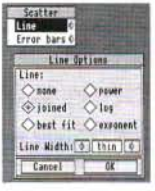
clustered, stacked or layered bar charts,

scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars,

line graphs with choice of normal, cumulative area or stacked area displays.

ChartWell gives you **complete user control** over:

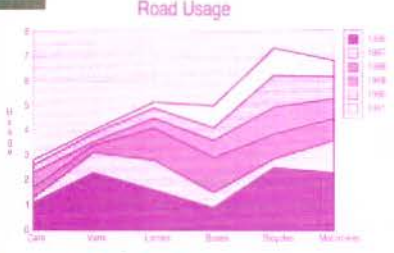
choice of colour,
data point styles,
bar widths and spacing,
use of titles and labels,
legends to provide a key,
graduated and shaded backgrounds,
scales and tick marks, etc.



Flexibility

ChartWell allows you to select only part of the data for display.

You can also change the order of display - a useful feature when creating bar charts - data can be arranged in ascending order so long bars will not overlap shorter ones.



Use of **'style sheets'** allows a set of options to be saved with data for future reference. User choice of start-up options.

Chartwell is supplied with an Outline Font Manager and Swiss-B outline font.

The disc includes demonstration data and graph files.

The package is supplied with a full reference manual with an introductory tutorial section.

Price **£24.95** (inc.VAT) to RISC User members, **£28.95** (inc.VAT) to non-members. P&P is extra. Stock Code **PCHWb**

RISC Developments Ltd. 117 Hatfield Rd, St. Albans, Herts AL1 4JS. Tel. (0727) 40303 Fax (0727) 860283

Video on Your Desktop

Alan Wrigley reviews an exciting new hardware product for the Archimedes.

If you were at the Acorn User Show in October, you may have seen the Irlam Instruments stand with its impressive display of real-time video in a window on the Desktop. Desktop video is the latest manifestation of the Arc's increasing presence in the field of multimedia (see the article on this subject in the last issue of RISC User). Irlam is the first company to get a working product onto the market, but a similar system from Wild Vision is due for release very shortly.

In short, a Desktop video system is a real-time video digitiser. The Irlam system is called *Moving i-Mage*, and consists essentially of an expansion card together with the necessary controlling software. Input from a video source (VCR, video disc, camera etc.) is connected to the card, and the analogue video signal is converted to digital data and stored in a bank of RAM on the card known as the framestore. Data is simultaneously taken from the framestore to create the real-time image, which is displayed in a window on the Desktop under the control of software, allowing a number of parameters such as size of image and colour balance etc. to be altered as required.

The clever part of the system is that the RGB output from the Arc to the monitor is diverted via the expansion card, which inserts the output from the framestore into the signal and passes it on to the monitor. Thus the video display does not have to rely on the ARM processor or the Window Manager to allocate time for the display to be updated, and is therefore genuinely real-time. Furthermore, the image is not dependent on the limited range of colours available from the Arc, and is displayed in full technicolour irrespective of the mode you are working in. At present the system supplies approximately 21-bit colour information to the monitor (around 2 million colours), which is at least as good an average television or VCR can manage. However, an upgrade will be available shortly from Irlam which will provide full 24-bit colour, equal to the highest quality video sources.

Desktop video in action showing the video display in a window alongside other applications

POTENTIAL FOR DESKTOP VIDEO

Desktop video is certainly no gimmick. The uses for it fall into a broad spectrum, and marketed properly, it could further enhance the Arc's reputation as a high-performance computer in a number of fields. One of these is computer-based training. The control application supplied is seen only as an example of what can be done with Moving i-Mage - the real meat in software terms is a comprehensive range of SWI calls, and also a C library, which enable software producers to control the system directly from their own applications.

The first major user of Moving i-Mage has been Westland Systems in its Avanti training package. As an example of the possibilities for this medium, Westland is using video sources in training programmes for maintenance staff on its Lynx helicopter. Video pictures can, for example, show a pilot operating a control in one window, and the effect of that control on the rotor in another,

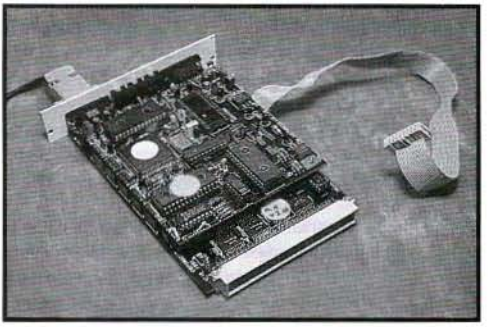
with sound effects and overlaid text to reinforce the message. Oak Solutions is also busily engaged in updating Genesis to work with Moving i-Mage. It will be possible to display real-time images directly from the Irlam board in a Genesis frame, and Oak hopes to be demonstrating at BETT a Genesis application on the battle of the Somme incorporating contemporary film clips of the battle. For bespoke training applications, the ability to control a real-time video source from software, and to have it multi-tasking with other applications, opens up a whole range of possibilities.

Another potential use is surveillance. The expansion card can accept up to three video sources at any one time, and these can be polled by software. The Arc could form the basis of an intelligent but inexpensive surveillance system, while the computer is used at the same time for everyday office work!

DETAILS OF THE PACKAGE

The Moving i-Mage system consists of a half-width expansion card, plus a disc containing the control application. The system is suitable for all Archimedes models, from the A305 to the A5000 (but not the A3000 unless you have an external Archimedes expansion card box). Irlam has deliberately gone for a half-width card in order to minimise the loss of podule space, particularly in an A540 which already has one slot occupied by the SCSI card. To cram a system of such complexity onto a small card has required Irlam to use surface-mount technology and to sandwich two circuit boards together, joined by connectors along the edges. The upper card contains the digitiser circuitry, and because it is removable it can be upgraded to cope with different video standards. The 24-bit upgrade has already been mentioned, and others are being planned by Irlam.

The board looks well-made and professional. The 9-pin plug taking the RGB lead to the monitor now plugs into the rear of the card, while a short lead supplied with the system completes the RGB connection between the card and the Arc's output socket. Three phono sockets are provided for composite video sources (PAL or NTSC). You can also connect a Super VHS (S-VHS) source but this requires two of the sockets for separate luminance and chrominance signals, and also a small upgrade to the digitiser board.



The Irlam Moving i-Mage expansion card

The manual provided with the review sample was not the final version, but nevertheless was easily understood, and I had no difficulty with either fitting or using the system.

USING MOVING I-MAGE

Having connected a video source to the card and installed the *movingi* application, simply clicking on its icon brings up a window in which the video signal is displayed. You will not, however, get any sound through the Archimedes. This would have added significantly to the complexity of the board, and in many training applications an external amplifier would be preferable in any case.

The window behaves just like any other Desktop window, and can be dragged around the Desktop in the same way. It can be sent behind other windows, whereupon the visible parts of the video picture continue to be displayed. The display can be controlled by a SWI call which fits and scales the video image into an area of the screen of the specified size (this may in fact be larger than the physical size of the

screen). This means that, by determining how and when you call the SWI, you can arrange for the display to be either fixed-size or automatically scaled. A fixed size image can thus remain at the originally specified size. Making the window smaller will crop the image, and the scroll bars can then be used to move around it. If you choose automatic scaling, the full image can be scaled to fit the window regardless of the latter's size or shape, or the positions of the scroll bars. Thus the image can be distorted in either plane by dragging the size icon around the screen. The only small disadvantage of this is that it requires a small amount of processor time to re-scale the image each time the window is re-sized.

Using the control application, or by calling the SWIs from your own software, it is possible to alter such parameters as the colour balance, saturation, brightness, contrast etc. as you would expect. The image can be frozen at any point, and once frozen can be saved to disc, either as a sprite or in YUV format. This is a format used in TV systems which stores the video information not as RGB values, but as luminance (brightness) and chrominance (colour). This has advantages which are beyond the scope of this review, and is the native format of Moving i-Mage; i.e. the digital data is stored in the framestore as YUV information. Additionally, it is possible to load a previously stored image into the framestore, opening up the possibility of using the board as a 24-bit graphics display card, or for titling and special effects.

One of the most interesting features of the system is the ability to key the video to one of the standard 16 Wimp colours. This means that wherever this colour appears on screen, the video display will show through it as if it were completely transparent. For example, by making colour 1 transparent, which is the normal background colour for Filer windows, you could place a directory viewer in front of the Desktop video window, and you would see the video picture through the directory viewer, with all the icons in the viewer superimposed on the picture. This opens up all kinds of possibilities for special effects using superimposition as a tool. Irlam is also currently developing a product which will enable users to mix the superimposed video and Desktop sources in varying proportions, and to fade from one to the other.

CONCLUSIONS

The hardware did all that was expected of it and appeared to work faultlessly. There were some bugs in the control application, but Irlam is aware of these and is rectifying them. In any event, the control application is seen only as a taster of what is possible, and anyone who buys this system will have uses in mind far beyond the simple functions provided here. Given that those working in the areas at which this product is targeted are used to spending large sums of money, the price certainly doesn't seem excessive, and the package is an excellent example of the way in which the Archimedes is continually pushing forward the frontiers of the world of computer applications.

Primary and secondary educational establishments may find it hard to justify this kind of expenditure, but I can only say that in my opinion this is one of the most exciting developments in the educational field since the Arc was introduced, and surely must represent the way things will go in the future. I doubt, though, if many sales will be achieved in the domestic market, but having said that, the ability to keep one eye on what is happening in the Test Match while continuing to work would solve a perennial problem for me!

Wild Vision's *Eagle* system is promised for the BETT Exhibition, but was not available for review so I was not able to compare the two systems directly. Eagle is likely to offer similar facilities to Moving i-Mage.

Product	*Moving i-Mage*
Supplier	*Irlam Instruments Ltd.* *Brunel Institute of Bioengineering,* *Brunel University,* *Uxbridge UB8 3PH.* *Tel. (0895) 811401*
Price	*£1162.07 inc. VAT*

RU

RISC OS 3 Basic

Our look at the new features of RISC OS 3 continues with this study by David Spencer of the enhancements to Basic.

RISC OS 3 actually includes two versions of the BBC Basic V interpreter - the standard one built into the ROM, and a disc based equivalent, Basic64, which can handle higher precision arithmetic. We will come back to this second form later. The actual version of both interpreters is 1.05, as compared to 1.04 on RISC OS 2. The following sections of this article will look in detail at the differences between 1.05 and its predecessor.

CRUNCH

The new command CRUNCH can be used to compress Basic programs in memory. It takes a numeric argument, which is best thought of as a binary number with each bit controlling an aspect of the crunching:

Bit 0 = 1: remove spaces before statements
Bit 1 = 1: remove spaces in statements
Bit 2 = 1: remove REMs (except first line)
Bit 3 = 1: remove empty statements
Bit 4 = 1: remove empty lines

CRUNCH %11111 (or CRUNCH 31) will perform the maximum compression, but may cause problems with line number references if blank lines are removed. CRUNCH %1111 (i.e. CRUNCH 15) is safer, and this is applied automatically to programs run with the '-quit' option which is the default to running Desktop applications in Basic. Not only does this save memory by shortening the program, but the interpreter is also optimised for executing crunched programs, and so there will be a speed advantage as well. You do however need to take care when crunching assembly language statements as the space after the mnemonic is removed, causing problems with the version of Basic in RISC OS 2.

PRINT FORMATTING

The variable @% which controls how numeric values are displayed has up until now had to be set to a cryptic hexadecimal value in order to achieve a desired effect. Now, however, Basic has adopted (well nearly) the 'printf' formatting conventions from ANSI C for setting @%. This means that @% can be set to a string controlling the format, this string being:

```
[+][g|f|e][<width>][.|,<precision>]
```

While this looks daunting, all it says is that a valid @% value is a + followed by one of the letters 'g', 'f' or 'e', followed by a number, and finally a '.' or ',' followed by another number, though each part can be omitted. The letter sets the format: 'g' for normal, 'f' for fixed point and 'e' for exponential form. The width and precision are as before, and the '+', if present, forces the format to be used for STR$ as well as PRINT. Replacing the '.' between the width and the precision by a ',' will use a comma as the decimal separator, a la Europe. The default setting of @% is "g10.9".

For example, @%="E10.3" will switch to E format with a width of ten and a precision of three digits, while @%="+" will simply force the current @% format to be used for STR$.

@%= accepts both the string format and the old numeric style, while LVAR always lists the string version. PRINT @%, however, displays a numeric value and LET @% = can only take the numeric form.

END

The previous version of Basic introduced the statement END=<value> to change the amount of memory allocated to Basic. This is of great importance within the Desktop, where it is desirable to relinquish any memory that you are not using. Unfortunately, END= on version 1.04 had the nasty side-effect of flattening Basic's stack, losing track of any procedure calls, REPEAT loops etc. This effectively rendered END= useless in a structured program. Now, though, END= has been improved so that it will work in all circumstances, except within INSTALLed libraries, EVAL or LOCAL ERROR calls or nested local arrays. This will be a great boon to people writing Desktop applications in Basic.

BASIC AS TEXT

New commands for converting programs to text and vice-versa have been added:

```
TEXTLOAD <string expr>
TEXTSAVE <string expr>
TEXTSAVEO <expr>, <string expr>
```

TEXTLOAD will load the named ASCII file and convert it into a Basic program, while TEXTSAVE performs the opposite function by saving a program as text. TEXTSAVEO is similar to TEXTSAVE, but takes an additional parameter to specify the formatting of the program, as used by LISTO.

TRACE

For debugging, TRACE can now be used in the form TRACE TO "filename" to output all the trace information to a file. TRACE CLOSE will stop the output, and the variable TRACE will return the file handle, which allows the program to output any additional information if tracing is enabled, for example:

```
IF TRACE BPUT#TRACE,("X is "+STR$X)
```

Line number tracing and procedure call tracing can now be on together as well.

OTHER CHANGES

When used to read real numbers from a file, INPUT# can now cope with eight byte high precision values as well as Basic's normal five byte type. The higher precision types are recognised by &88 in the file, rather than &80.

Creating arrays, copying entire arrays, or assigning a value to all the elements of an array have been speeded up by between three and ten times. Also, a bug that hindered the copying of complete arrays has been fixed.

Error handling within libraries has been enhanced to include the name of the library with the error message, this name being gleaned from the REM at the start of the library. Error numbers have been tidied up so that all fatal errors have error number 0, and a bug that caused errors to be reported in the assembler directive ADR when they shouldn't have been has been fixed. The INSTALL statement has been changed to make it a command, which prevents it appearing within programs. Previously, if INSTALL was encountered in a program all hell was let loose as large parts of Basic's workspace were overwritten.

Finally in the enhancements category, a large number of bugs have been fixed. One in particular that has now gone was the need to have a space between any assembler mnemonics and the corresponding operands.

BASIC64

As already mentioned, Basic64 is an alternative version of the interpreter, and is supplied on disc within the !System directory. From an operational point of view, the two versions are identical with one important exception: Ordinary Basic uses its own five-byte format and arithmetic routines for floating point numbers, while Basic64 uses the IEEE eight-byte format and the floating point emulator.

This change is desirable for two reasons. Firstly, Basic64 allows a larger range of floating point numbers and higher precision. To this end, the scientific calculator supplied on the application discs uses Basic64. Secondly, when the long-awaited floating point co-processor is installed (for which the A5000 has a socket), Basic64 will perform floating point arithmetic considerably faster than normal Basic. Be warned though, without the floating point hardware Basic64 is considerably slower than Basic at floating point arithmetic.

GOING INTERNATIONAL

One of Acorn's aims with RISC OS 3 is to allow it to be easily ported between countries, and Basic is no exception to this. We have already seen how numeric printing can now use ',' as well as '.', and in order to allow language changes, all of the text messages appearing in Basic (including error messages) have been factored out into a module called *BasicTrans*. By replacing this module, which interfaces to Basic via a set of SWI calls, the messages can be quickly changed for any language. Also, Basic and Basic64 share the same set of messages, saving a not insignificant amount of memory. RU

Archimedes Software

Disc 7 - Chess Program for The Archimedes.
A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window. You can work with other programs whilst you play Chess. Many features, computer play, hint, save games, edit etc. Risc User July 1991 said: *"Chess is an absolute bargain. .playing at a comparable level it always beat Micro Power's offering. ...this has to be the one to go for".*

Disc 8 - CrossStar 2.XX Crossword puzzle solver
Fully RISC OS compliant desktop Crossword puzzle solver. 200,000 word dictionary. Solves interlocking clues. Editable/user definable dictionaries. Saves grids as Draw files. Browse through dictionary. Check grid for new words. Save clues as text file.

Disc 16 - Spark RISC OS Archive program
Spark, allows you to store files and directories in archive files in a very compressed form. e.g. sprites often take up only 10% of normal space. Files in archives, can be accessed just like files on disc. Now new Spark series 2.XX, has lots more features. Reads all these formats, zoo, zip, lzh, UNIX and Archie Tar, Compress. Reads and writes PKarc, SEA/PC arc, uucode, atob/CET+, FCET.

Disc 19 - StarChart. Star maps.
Program that uses a database of 9000 stars etc. to produce star maps. Also calculates the positions of the planets and shows them on the maps. Star maps are in the form of Draw files and can be imported into !Draw, Ovation etc.

Disc 32 - Charm. High level language and environment.
Charm, is a high level language similar to Pascal and C. This implementation, includes a compiler, linker and assembler, with an editor, and a desktop environment to use them. The Charm system is both fast and ideally suited to being used on 1Mbyte and floppy machines. Demos with source, Chinese checkers and an arcade style game. An easy way to produce ARM code programs.

Disc 33 - Panorama. Your window on the World!
180,000 coordinates outlining the lakes, rivers, continents, state boundaries etc. of the World and a program that can produce Draw files from them. You can make maps of any part of the world and then use them in DTP etc. programs. Includes the positions of nearly 1000 cities. Does simple, cylinder, Mercator and perspective projections. Can be used from a single floppy disc and requires no setting up.

Disc 35 - Trace. Banish those jaggy blues!
Takes Sprites and turns them into Draw files. Works with full colour Sprites. Sprite format pictures are plentiful, but if you try to scale them, they develop jagged edges. Trace allows you to convert them into Draw files which can be made any size you want. You can now use the powerful tools in Draw on Sprites. Now with D2Font program for turning Draw files into fonts. Make your own fonts from sprites.

Discs are £5.99 each, all inclusive. Buy four claim one free!

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.
Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, clip art), please send for free list.

Customised Artwork with smArt

Lee Calcraft tries out 4Mation's new linked graphics system

smArt is a so-called linked graphics system which allows you to create customised images on a particular topic by making a series of selections from a menu tree. The completed image may then be saved in Draw file format for use in DTP packages and the like. This professionally produced package contains a well illustrated and clearly written manual accompanied by two discs. One contains the application itself with a couple of example files, while the other contains smArt files on no less than 24 topics.

Additionally, there is a growing number of smArt file packs on topics ranging from fashion to dinosaurs - and for those who wish to create their own smArt files, a *smArt filer* application.

The whole of the smArt suite is copy-protected, and may not be used or copied until the user has supplied a name, which is then incorporated into the package's copyright message. Each time you install a new smArt file, this name and the serial number of your version of smArt are written back to the disc, which henceforth will only work with a copy of smArt bearing the same name and serial number. This should present no problems in a classroom situation, since smArt comes with a free site licence which permits multiple copies of it to be made for use on the same site.

smArt IN USE

The best way to convey the way in which the smArt package works is to run through a short session. The *Car front* file is a good one to use for this because of its simplicity. If you double-click on this - or drop the file onto smArt's icon on the icon bar, a window will appear with a complete picture of the front of a car.

Clicking Menu over this window reveals the standard smArt menu consisting of just four entries - see figure 1. *Full view* is selected by default, and supplies automatic scaling to fit the current size of the window. When this is deselected, it is possible to select the *Zoom* option to zoom in on a small part of a picture.

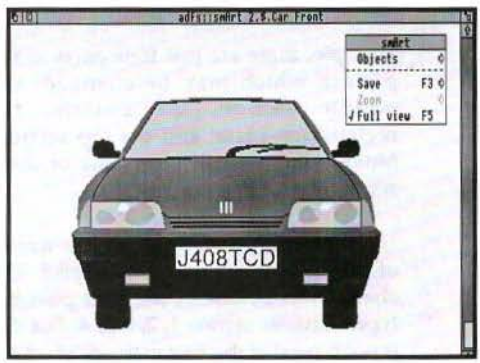


Figure 1. Constructing a car

The *Save* option saves the current picture as a Draw file. The name *DrawFile* is supplied by default, but unfortunately this does not take on the last-used name when making subsequent saves. This deviation from normal RISC OS practice is a little inconvenient. Also, there is no way to save your place in the package, so if you have saved a particular Draw file, and wish to alter it in some way on another occasion, you must start again from scratch - and with some files this can be very time consuming. Also the package does not warn you before it destroys your work when you close a smArt window.

The most important part of the menu is the *Objects* entry. This leads to a menu tree containing all the possible options for a given image. In the case of our simple

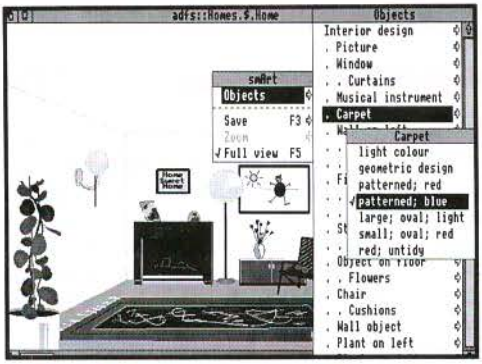


Figure 2. Interior design using the Homes disc

example, there are just four parts to the picture which may be changed: the middle section, the chassis, the registration plate, and the top section. Moving the pointer across any of these reveals the choices available.

In this particular example, the names of the choices are not very helpful. The chassis can be one of the four possible types: Chassis section 1, 2, 3 or 4. But this is not typical of the vast majority of smArt files, which provide much more helpful menu entries.

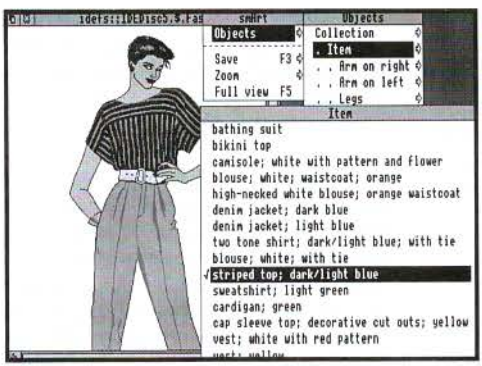


Figure 3. smArt Fashion

Selecting any one of the new options creates a new image with the relevant part changed. The clever thing about smArt is that it scales the sections which it brings together in creating a particular image. Thus for example, if you change a face from thin to round in a particular image, the ears are redrawn to give a perfect fit. This is what makes it *smart*.

Finally, when you have created the car front that you require, you can save away the Draw file for later use - or you may drop it directly into any software package which accepts Draw files, or onto a printer driver icon.

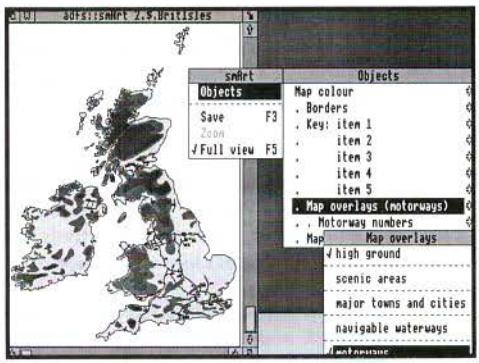


Figure 4. British Isles options

Many smArt files also provide a menu shortcut. If you click Select (or Adjust) over a particular section in a picture, a sub-menu appears which, depending on which smArt file you are using, often gives all the alternative top-level objects which can be used at the point in question - though sometimes it permits entirely different choices to be made.

This is a useful idea, though it strays somewhat from the RISC OS guidelines, and as an unwanted consequence means that you cannot get rid of smArt menus by clicking outside of the menu, since in most cases, this cause a new menu to reappear.

Another slightly unusual effect is that windows automatically gain input focus if

you move the pointer into them. The purpose of this is to enable smArt to respond to the Page Up and Page Down keys, which will conveniently zoom an image in and out in such a way that the portion of the image under the pointer becomes the focus for the zoom.

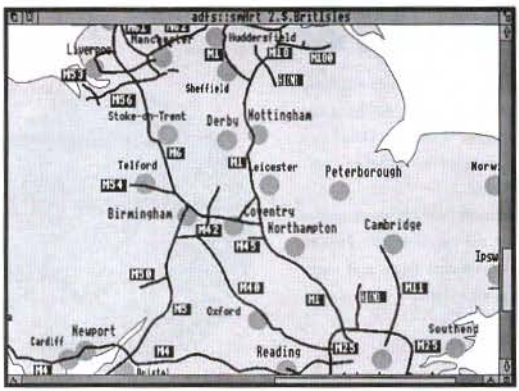


Figure 5. Zooming in reveals impressive detail

Although it is not obvious from our car body example, the user has no choice as to whereabouts on a picture a particular item will appear: smArt should be thought of as a system which manages scaled overlays, each attached to a parent component in a particular way. In most cases this causes no problems at all. For example in the optional *Fashion* file, you can select a number of different arm positions for the model, but they are all (obviously) connected at the shoulder.

With the *Trees and Gardens* disc, this proves to be more of a limitation, since the size and shape of the garden, and the chosen viewpoint are all predetermined. As a user you can determine whether the left-hand wall is a larch lap fence, a red brick wall (not a good likeness), a grey stone wall or privet hedging (again, not very impressive - no texture), but that is all. There is an ornament at the bottom right of the picture, and while you can choose from a range of six objects for this ornament, you cannot choose its exact position and indeed you cannot have a garden in which it does not appear.

By and large, the quality of images in the files provided with the smArt package, and those available separately, is excellent, though there are isolated exceptions. The precision of most drawings is very high indeed, and this becomes apparent when printing with a laser printer, or when you zoom in on a particular part. For example, the British Isles map, which accompanies the application, can be zoomed up to give readable motorway numbers and place names.

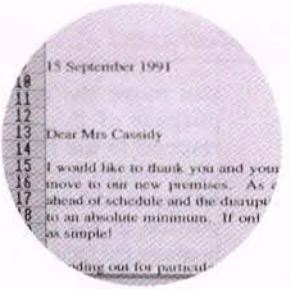
CONCLUSION

I would think that there are two main uses for this package. It will provide an excellent source of customisable clipart for use with DTP. It should also find many uses in education, and the *Faces* and *Dinosaurs* packs were probably put together with this in view. For the really ambitious, *smArt Filer* enables you to create your own smArt files from sets of Draw files. This is an interesting and innovative product which deserves to do well.

Product	*smArt*
Supplier	*4Mation,* *14 Castle Park Road,* *Barnstable,* *Devon EX32 8PA* *tel. (0271) 25353*
Price	*£64.65 inc. VAT* *smArt files: £18.80 inc. VAT* *smArt Filer: £41.25 inc. VAT*

4Mation will also supply a free demo disc of smArt and Chameleon if you send them a blank disc together with return postage.

A number of Draw files created with smArt are supplied on this month's disc, including a very high resolution map of the British Isles, and a sample from the Fashion and Homes discs. RU


15 September 1991
Dear Mrs Cassidy
I would like to thank you and your
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to an absolute minimum. If ont
as simple!

PIPEDREAM 4

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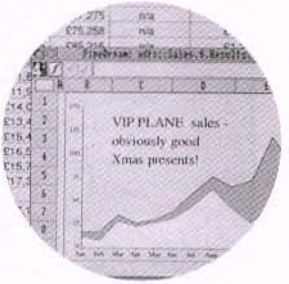
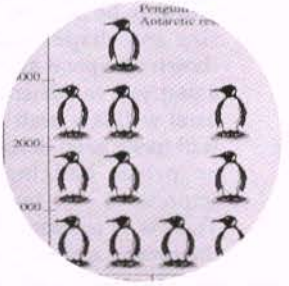
RRP £196+VAT. Call for education prices and site licences. PipeDream 4 is ideal for any Archimedes, A3000 or A5000 with 2MB RAM or more.





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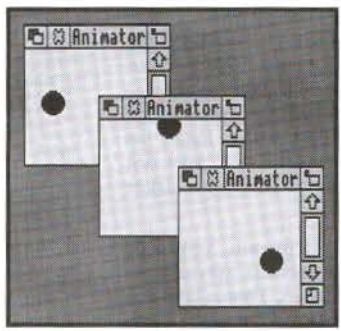
A Desktop Animator

by Lee Calcraft

The program presented here implements an animated sequence within a small window on the Desktop. It is fully multi-tasking, and uses the *Wimp_PollIdle* call to drive the animation.

The program is fairly short, and therefore ideal for experimentation. What is more, the bulk of it is concerned with interfacing the Wimp. The parts which deal with the animation have been kept relatively simple in the first instance so that it is easy to follow how it works. Next month we will add a more sophisticated animator to this base program.



Desktop animation

The animation created here is of a red ball (more correctly a disc) which bounces around the display window. A degree of randomness has been introduced into the vertical and horizontal velocities of the ball to keep its trajectory more interesting. However, the principles used here can easily be tailored to a display of your choice.

To get the animator up and running you will need to create a new directory called *!Animator*, and store in it suitable !Sprites, !Run and !RunImage files. The sprite file should contain a single sprite of dimensions 34x17 pixels called *!animator*. The !Run Obey file should contain just two lines as follows:

```
WimpSlot -min 16K -max 16K
Run <Obey$Dir>.!RunImage
```

and may be created using a text editor such as Edit (using the *Create* and *New Obey file* options from the icon bar menu). Finally, the accompanying listing should be typed into Basic, and saved with the name !RunImage.

RUNNING THE ANIMATOR

When you run the completed application, you should see a resizable window containing the bouncing disc. To keep the program simple, the Animator does not install an icon on the icon bar, so to terminate the program, you just need to click on the window's Close icon. You will notice that each time that the ball hits the window edge, a short beep is heard. If you wish to eliminate this you can remove all references to PROCblip in the program. To alter the volume of the sound, alter the value *-8* in the definition of PROCblip. The volume parameter can range from -15 (loudest) to 0. To alter the pitch, adjust the value *70* in the same line. The range here is from 0 to 255. The higher the number, the higher the pitch.

HOW IT WORKS

The most important part of the program, from the point of view of animation, is the call to SYS *Wimp_PollIdle* at line 210. This tells the Wimp to recall our task after *inc%* centiseconds. This is set to the value 5 in *PROCinitialise*, and it is worth experimenting with this to see the effect. Altering this changes the number of frames displayed per second, and the speed at which the ball moves. The lower the value, the more frequently the Wimp will return control to our task.

When the Wimp returns to our task in response to the *Wimp_PollIdle* call, it does so with a reason code of zero, and this is picked up in *PROCpoll*, and results in *PROCforce* being called. This procedure calculates the next position of the ball, generating beeps if it has hit the perimeter of its bounding box. The last five lines of the procedure are concerned with telling the Wimp that the contents of the window should be redrawn.

In a non-multi-tasking program we would simply update the screen directly to reflect the new position of the ball, but we cannot do that here. Instead we make a call to the Wimp to tell it that it should initiate a redraw of the window. In due course the

Wimp then polls our task again, this time with reason code one. This is a redraw request, and we respond to this by calling *PROCredraw*, which draws the ball in its new position, using values of *X%* and *Y%* calculated during the last call to *PROCforce*. The variables *x0%* and *y0%* hold the screen offsets to the work area origin of the screen.

If you want the ball to behave in some other way, you will need to alter *PROCforce* accordingly. If you want to change both the object or objects drawn, *and* the way in which they behave, you will need to change both *PROCforce*, and *PROCredraw*. Note however, that the last four lines in *PROCforce* are quite general, and will not need to be changed, even if you use a larger or a scrolled window.

When you run the program, you will notice that there is a certain amount of flicker as the ball is redrawn. This is because the whole window is redrawn with each new frame. This can be avoided using a different redrawing technique which calls *SYS Wimp_UpdateWindow*. But the code for this is a little more complex.

In a concluding part next month, we will add a couple of procedures to this program to implement a sprite-based animator.

```
  10 REM            >!RunImage
  20 REM Program    Desktop Animator
  30 REM Version    A 0.10
  40 REM Author     Lee Calcraft
  50 REM RISC User Jan/Feb 1992
  60 REM Program    Subject to Copyright
  70 REM            Not Public Domain
  80 :
  90 PROCinitialise
 100 quit%=FALSE
 110 ON ERROR PROCwimperror
 120 WHILE NOT quit%
 130  PROCpoll
 140 ENDWHILE
 150 SYS "Wimp_CloseDown"
 160 END
 170 :
 180 DEF PROCpoll
 190 SYS "OS_ReadMonotonicTime" TO time%
 200 time%+=inc%
 210 SYS "Wimp_PollIdle",,block%,time%
TO reason%
 220 CASE reason% OF
 230  WHEN 0:PROCforce
 240  WHEN 1:PROCredraw
 250  WHEN 2:SYS "Wimp_OpenWindow",,blo
ck%
 260  WHEN 3:quit%=TRUE
 270  WHEN 17,18:IF block%!16=0 THEN qu
it%=TRUE
 280 ENDCASE
 290 ENDPROC
 300 :
 310 DEF FNcreate(vwx%,vwy%,vww%,vwh%,e
xtx%,exty%,flags%,title$)
 320 $block%=STRING$(88,CHR$0)
 330 block%!0=vwx%:block%!4=vwy%
 340 block%!8=vwx%+vww%:block%!12=vwy%+
vwh%
 350 block%!24=-1:block%!28=flags%
 360 block%?32=7:block%?33=2
 370 block%?34=7:block%?35=1
 380 block%?36=3:block%?37=1
 390 block%?38=2:block%!40=0
 400 block%!44=-vwh%-exty%
 410 block%!48=vww%+extx%
 420 block%!52=0:block%!56=&3D
 430 block%!60=3<<12:$(block%+72)=title$
 440 SYS "Wimp_CreateWindow",,block% TO
 handle%
 450 =handle%
 460 :
 470 DEF PROCopenwindow(handle%)
 480 block%!0=handle%
 490 SYS "Wimp_GetWindowState",,block%
 500 SYS "Wimp_OpenWindow",,block%
 510 ENDPROC
 520 :
 530 DEF PROCgetorigin(block%,RETURN x0
%,RETURN y0%)
 540 x0%=block%!4-block%!20
 550 y0%=block%!16-block%!24
 560 ENDPROC
 570 :
 580 DEF PROCwimperror
 590 !block%=ERR
 600 $(block%+4)=REPORT$+" - Internal e
rror code "+STR$ERL+CHR$0
 610 SYS "Wimp_ReportError",block%,3,"A
nimator" TO ,response%
 620 quit%=response%=2
 630 ENDPROC
 640 :
 650 DEF PROCinitialise
 660 inc%=5:X%=0:Y%=0:j%=20:k%=15
 670 DIM block% &200
 680 $block%="TASK"
```

```
  690 SYS "Wimp_Initialise",200,!block%,
"Animator" TO version%,task%
  700 window%=FNcreate(600,500,200,200,0
,0,&BF000002,"Animator")
  710 PROCopenwindow(window%)
  720 ENDPROC
  730 :
  740 DEF PROCforce
  750 X%+=j%:Y%+=k%
  760 IF X%>180 THEN
  770  j%=-ABS(j%)
  780  IF j% THEN PROCblip
  790 ELSE
  800  IF X%<20 THEN
  810   j%=ABS(j%)
  820   IF j% THEN PROCblip
  830  ENDIF
  840 ENDIF
  850 IF Y%>180 THEN
  860  k%=-ABS(k%)
  870  IF k% THEN PROCblip
  880 ELSE
  890  IF Y%<20 THEN
  900   k%=ABS(k%)
  910   IF k% THEN PROCblip
  920  ENDIF
  930 ENDIF
  940 IF RND(100)>80 THEN j%+=1
  950 IF RND(100)>80 THEN k%+=1
  960 !block%=window%
  970 SYS "Wimp_GetWindowInfo",,block%
  980 xmax%=block%!20+block%!12-block%!4
  990 ymax%=block%!24+block%!8-block%!16
 1000 SYS "Wimp_ForceRedraw",window%,blo
ck%!20,ymax%,xmax%,block%!24
 1010 ENDPROC
 1020 :
 1030 DEF PROCblip
 1040 SOUND 1,-8,70,1
 1050 ENDPROC
 1060 :
 1070 DEF PROCredraw
 1080 SYS "Wimp_RedrawWindow",,block% TO
more%
 1090 PROCgetorigin(block%,x0%,y0%)
 1100 WHILE more%
 1110   SYS "Wimp_SetColour",11
 1120   CIRCLE FILL x0%+X%,y0%-Y%,20
 1130   SYS "Wimp_GetRectangle",,block%
TO more%
 1140 ENDWHILE
 1150 ENDPROC
```

RU

!Transfer

Transfer, the **NEW** utility that lets you copy **text** from any icon in **any RiscOS application** and transfer it to **any other.**

The copied text can be **inserted** into other text, or it can **replace** it. You will find many uses for **Transfer** as it makes the contents of practically all field or writable icons, 'drag-able' between applications. It also lets you drop the text into **documents** as well as icons. An obvious use would be to grab a name and address from a database and deposit it into a word processor, (or even another database).

Transfer is itself, a RiscOS application and sits on the icon bar. A simple menu gives you complete control of its actions.

It is simplicity itself to use. All transfers are carried out by mouse clicks. Point and click at the text you want, then point and click again to deposit it. It is invisible to applications and does not interfere in any way with their operation. **Transfer** will work on any Archimedes series computer.

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VISA

RISC OS 3 Draw

Reviewed by Mark Moxon

When I bought my A410/1 about 2 years ago, I had no other software except for the Applications Discs, so I used Draw for all the "Desk Top Publishing" I did and, like most other users, I found that it was really only suitable for very basic text manipulation. However, Draw has now been enhanced considerably in RISC OS 3, the operating system on the A5000 (available as an upgrade for existing machines by summer 1992). This is a look at the enhancements of Draw version 0.76 over its predecessor (version 0.44).

The first new "feature" of Draw that you notice is the 17 page tutorial that has been added to the new User Guide. It describes how to create a simple picture of a butterfly, and introduces the concepts of objects, paths and so on. It is only a very basic introduction to the application, and anyone who has used Draw before will find very little new information here, but it does serve as a practical introduction for beginners.

The rest of the section on Draw is very similar to that in the RISC OS 2 User Guide. Documentation for the new features has obviously been added, but the text is almost identical to that in the "old" version. As a result, examples are still few and far between, which I think is a shame - the tutorial is only a very basic introduction, and the rest of the section feels more like a reference manual.

The next thing you notice is that Draw loads very quickly indeed, and uses less memory than before (80K when it loads, as opposed to 272K in RISC OS 2). This is because Draw is now resident in ROM, along with the other major RISC OS applications, which also means that Draw is always available, making the use of Draw files as clip art in DTP that much easier.

However, the best new feature of Draw has to be that it now makes use of keyboard shortcuts. The menus are much wider because many menu entries include details of a key which, when pressed, has the same effect as choosing the option from the menu. The Acorn guidelines have been adhered to (not surprisingly!) so that, for example, F3 brings up the Save box and the Print key displays the Print box. There are also a few features which are only available from the keyboard - for instance Ctrl-R toggles the Zoom factor between the present value and the previous value, and the F2 key allows named files to be loaded or inserted. Using the keyboard shortcuts makes Draw much easier to use for experienced users.

Figure 1. Text manipulation

All those who use Draw for placing text in their drawings will be glad to know that text handling has been much improved. In RISC OS 2, when a text item is created (using the "T" tool) the text is unchangeable, so the only way to alter the text is to delete the whole item and try again. However in RISC OS 3 the text can be edited from within the *Select* submenu, saving a lot of extra work if a mistake is made. Both text items and sprites can now be rotated (unless the text is in the system font), and text items can still be edited afterwards. Text in outline fonts can be converted into paths, so effects such as those shown in Figure 1 can be created easily (using, in this case, the new interpolation and grading features discussed below).

There is one very important point concerning text and sprite rotation - if in RISC OS 2 you try to use a Draw file containing a rotated sprite or text item created in RISC OS 3, the file will load correctly but the text or sprite will not be present. This is because these features are new, and are not supported by Draw in RISC OS 2.

Text areas, which (for example) allow text to be laid out in multiple columns and contain underlining, have not been changed from RISC OS 2. This is a shame, because this area of Draw is a very useful (and very inexpensive!) introduction to basic DTP, but is not terribly easy to use.

A fascinating new feature is the ability to interpolate between two objects. This enables you to group two objects and get Draw to insert similar objects between them (a process often called "inbetweening", though Draw is restricted to inbetweening with similar shapes). An example is shown in Figure 2, where two similar ellipses at 90 degrees to one another were interpolated. There are two types of inbetweening, "interpolation" and "grading", the only difference being that grading will fill the last object if appropriate (see Figure 1).

Text items and sprites can be rotated
Text items can be edited
Undo/Redo
Text can be transformed to paths
Interpolation and grading
Ability to print part of a page
Preferences can be saved
Cursor keys can be used to move the pointer
Keyboard shortcuts

Table 1. Major new features of Draw

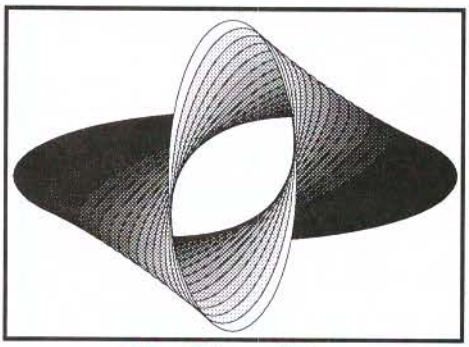

Figure 2. Interpolation

There is also a facility to undo actions, which can be a life saver when you accidentally delete your *magnum opus*. The size of the undo buffer is user configurable, and there is a redo facility in case you change your mind again.

The other new features vary from the aesthetic to the "very handy". For instance, if you move the mouse pointer over the edge of the Draw window when drawing or moving objects, the window automatically scrolls to accommodate the pointer; the Toolbox display stays fully open regardless of the size of the work window; the path edit features have been extended to enable individual points to be snapped to the grid, and to enable the path through a point to be flattened (so that it passes smoothly through the point); the graphics fill algorithm has been improved in RISC OS 3; the zoom features have been extended to allow, amongst others, zooming in on a rectangle selected by the mouse; grouping and ungrouping objects has been made more hierarchical; the cursor keys can be used to move the pointer accurately... there isn't enough room to mention *all* the small changes! There are many little additions that make this version of Draw more usable - for instance the font menu has been redesigned in the style of Impression so that each font name leads to a submenu containing all the styles available for that font (like Medium or Bold.Oblique), so having a lot of fonts doesn't necessarily mean having a very long menu.

Printing out large Draw files has been made easier, as you can now select an area of your file to print out, and Draw will scale the rectangle to fill the printed page. This makes printing large posters on an A4 printer much easier. The Print dialogue box has also been redesigned, but it has no more information than before, and I must say I prefer the old layout.

The whole Draw system can be configured to start up with certain attributes, like having a grid or not displaying the Toolbox pane. This so-called "Desktop boot file" method is a RISC OS 3 feature and works by creating a special boot file containing details of the applications loaded (amongst other things). As far as Draw is concerned, the important point is that the system variable *Draw$Options* is saved, which contains information on the configuration of Draw (like *Edit$Options* for Edit in RISC OS 2). This means that if you work on A5 paper all the time, you can configure this as the default page size.

Overall the changes to Draw have been sensible and useful, but there are still a few minor irritations. It is still very hard to enter circular sectors and arcs, and it would have been nice to see a library facility (as in DrawPlus, which is available from PD libraries). However, this version is far more usable than previous versions, and the enhanced text manipulation features are most welcome. RU

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Pinpointing Your Data

Mark Sealey assesses PinPoint, Longman Logotron's latest multi-media database package.

INTRODUCTION

At first sight, it may seem that PinPoint, the latest release from Longman Logotron, could fall into the trap of having obvious potential, but that its capabilities are too hard to describe for it ever to be a winner.

What Pinpoint can do is indeed hard to understand - at first. It is billed as an 'educational database'; it is that but it is much more. Indeed, the more you use it, the more likely you are to find that it has many uses, and it is a remarkable piece of software that is well worth investigating.

Put simply, Pinpoint is indeed a database, but it is one where fields can be of more types than the usual *character, numeric, alphanumeric, date* and *logical*. It is also a data handling tool whose flexibility, while not as great as that of Squirrel or Multistore (for example), certainly opens up many possibilities to users in education and business for presentation and data analysis work.

At the heart of the software lies a *sheet* which can be designed in much the same way as in a frame-based DTP package. Once you have settled on the layout, data can be entered into the PinPoint database, and later extracted and manipulated just as easily as the original layout was put together. Presentation standard graphics relating to the data can also be produced very easily.

In other words, PinPoint is a really user-friendly data-handling package with links to data from other RISC OS applications. It is also one where the collection, layout and presentation of data is deemed of greater importance than such facilities as heavy number-crunching or the use of indexes.

THE PACKAGE

For your money you get two discs, a 175 page User Guide, a registration form and some rather excessive packaging. The first disc contains the main program, with a Fonts directory (Font Manager and the Homerton font), a tutorial, a Desktop import utility, !System and !Sysmerge. The second disc has examples, and a copy of the Magpie browser.

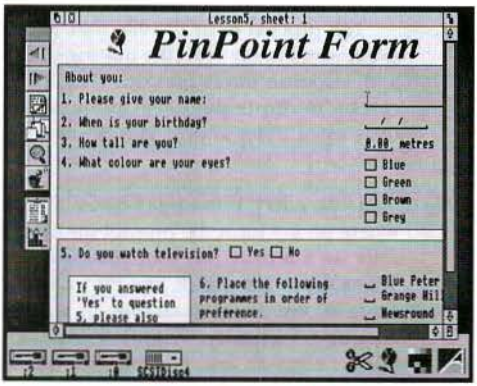

Figure 1. Creating a form

You install PinPoint on the icon bar in the usual way. To use it you must either drag an existing file onto this icon, or start a new file by specifying its name. In most cases there are Magpie-style icons in a toolbox strip to the left of the main window on which you are working. There is also a main menu, obtained by clicking with the Menu button anywhere in this window.

Some of the menu routings used are less than obvious. The *Analysis* facility, for example, is a separate stage in your work, one you would expect to be obtained only by a main icon bar route, especially since it can still be selected even when there are no sheets to analyse. What is more, the various

'departments' of PinPoint have a structure that takes some getting used to. Ultimately, though, it is all logical and consistent.

FORM DESIGN

The operation you are most likely to carry out first is form design. There are similarities with Longman Logotron's Magpie here, though some features of the latter have been extended. As shown in figure 1, there is a toolbox with nine options controlling operations within the form (text entry and removal etc.), while the slightly non-standard dialogue boxes allow font selection, choice of sizes, colours and the like.

The process is so flexible that you can experiment freely with the placing of fields and response boxes on your form (which can be multiple page, by the way) until their exact order and format is just as you wish.

Data entry need bear no relation to where on the form the prompt (or *Question Field*, as it is called by PinPoint) is located. These Question Fields can be in as many fonts as you have available, in whatever size and virtually whatever layout you wish. Selection and editing of fonts, back and foreground colour etc. are very like their Magpie equivalents. The application is also designed to make data highly visual, in order to assist with data collection. It succeeds admirably.

You might be a little uncomfortable with the icons of the toolbox, however. Their meanings are not always that self-evident. Other keyboard shortcuts and general menu layout, are up to scratch though.

To balance this, there are such features as the ability to place, move and scale graphics (sprites and Draw files), and to add text not specifically connected with question fields. This may be as labels for the graphics, or more general annotation relating to the survey or questionnaire around which the form is being designed - see figure 2.

DATA ENTRY

Suppose then, that you have designed your form, effectively an electronic data collection sheet. The next step will be to enter the data itself. In practice, PinPoint is so easy to use in this respect that it virtually does away with the need for pencil and paper; where portability is not an issue, (in a school, for example), users could enter responses and information directly at the keyboard.

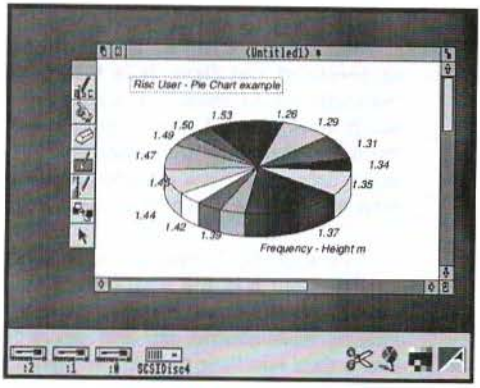

Figure 2. Generating a graph

DATA MANIPULATION

Suppose that all your data has been entered on the form as you want it. It is time to start using it. In the first instance you will probably want to use the *Worksheet* facility. This provides a spreadsheet-like display of all the sheets in a stack.

A *stack* is really a collection of sheets, so arranged as to limit the data being worked on to manageable proportions. You can decide how few or how many stacks (to a limit of four) you are going to work on by dragging them onto the *Workbench*, a further facility of PinPoint, accessed through a standard dialogue box.

Once you have your sheets to hand in this way, a number of operations can be performed on them. Sheets can be selected from a stack with user-defined criteria. Selection can be inclusive, exclusive and

based on values that are identical to, greater than and less than the criteria.

Data can also be sorted in increasing and decreasing order, and as multiple sorts such that once re-ordered (e.g. by age) a stack can be further sorted by a second field within the first. This is all performed by icons and standard dialogue boxes, and is easy and quite quick.

Certain statistical operations can also be performed on your data at this point: sum of values, median and mean values, and mean and standard deviation.

GRAPHS

From your data, four different types of graph can be drawn: pie, bar, line and scatter. These can also be enhanced by being shown in 3D. At this point one of the greatest strengths of this product emerges. That of having - effectively - a permanent virtual hotlink between data as it is entered and its representation in graph form.

Not only can data be represented in this way with comparative ease, but text can also be added (with much of the flexibility and style of DTP work using different fonts and spacing etc.) to enhance both the graph and the surrounding textual material.

The section in the manual on the *Graphics Presentation Editor* nicely groups together all the information relating to this. If you are unsure of PinPoint up to now, this feature will surely convince you.

Not that things are perfect, though. A serious omission is horizontal bar charts. As they stand, some legends at the foot of narrow vertical charts take on a cramped appearance regardless of which font is used. This could be avoided were it possible to place them alongside the column to which they refer. The same is true to some extent of other overcrowded displays.

DOCUMENTATION

As noted earlier, PinPoint is packaged in a rather bulky format. Longman Logotron has gone for an A4 glossy-covered manual. It contains a useful tutorial (files for which are on the disc), an example of its use by at least one school on Health Education, a standard explanation of the conventions used, and nearly seventy reference pages.

This is a sensible and accessible distribution of material, and anyone taking the time and trouble to familiarise themselves with it will be rewarded. Nevertheless, some areas are covered in the tutorial that are not to be found in the reference section (a full description of sorting, for instance), though these can be successfully located via the index.

CONCLUSIONS

PinPoint has its shortcomings, deficiencies and minus points. In some ways it is a compromise and there will clearly always be tasks that are beyond it.

It's horses for courses here. Most educational establishments will never push PinPoint beyond its limits. Its facilities and relative ease of use are likely to appeal to establishments from primary to further education.

Presentation is PinPoint's real forte. Individual items on displays can be singled out and amended. You can nearly always, with the exception of text overcrowding in graphs, end up with a screen (or hard copy) that looks good.

On the other hand, PinPoint provides the facilities to collect all manner of data stylishly and in a user-friendly way (perhaps by non-specialists), to edit and analyse the results, and to represent these in a variety of formats. If these are your requirements PinPoint could well be for you.

Product	*PinPoint*
Supplier	*Longman Logotron* *124 Cambridge Science Park.* *Milton Road.* *Cambridge CB4 4ZS.* *Tel. (0223) 425349*
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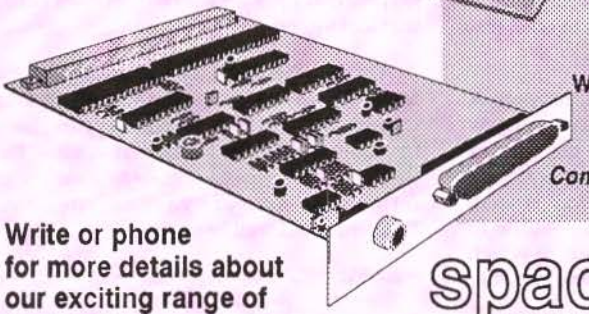

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Exploring UNIX On The Arc

Lee Calcraft abandons the RISC OS Desktop to do battle with one of the world's most popular operating systems.

UNIX is a very big topic to try to cover in a few magazine pages, and any brief treatment must necessarily be highly selective. Here we will skip the oft told tale of the history of UNIX, and try to give an impression of what it is like to use this operating system on an Archimedes. In this first article, we will look at some of the more common UNIX commands, while in a concluding part next month we will take a look at X Windows, the multi-tasking graphical user interface supplied with RISC iX, Acorn's licenced version of Berkeley UNIX.

```
Multi-user system started

RISC iX release 1.21
9:07am on Fri, 6 Dec 1991 on console of unix
unix login: guest
password:
Last login: Wed Nov 20 14:42:34 on ttyv1
RISC iX 1.21a made Wed Apr 17 20:25:31 1991
You have mail.

Welcome to the Acorn RISC iX workstation

Todays date and time is:
Fri Dec  6 09:08:18 GMT 1991
$
```

Figure 1. Logging on to RISC iX

Because UNIX was conceived and designed as an operating system for mainframe computers, it behaves quite differently from microcomputer operating systems. You are made aware of this right from the start by Acorn's provision of the two RISC iX manuals for each system. One is called the RISC iX User Guide, the other the RISC iX System Administrator's Guide - and you will need both if you are using RISC iX on a stand-alone machine, because you will be both administrator and chief user.

Like all good mainframes, you must log on before getting onto the system, and give an appropriate password - and if you can't remember it, you can't log on. If you log on as system administrator - using the id *root* - you will be empowered to perform all kinds of operations which other users are not. But you need to take care, because with power comes responsibility: as *root* you have permission to wipe important system files.

You can use a stand-alone RISC iX machine in two different modes - single user or multi-user - even though you are only using one physical machine. The latter provides an emulation of three multi-tasking terminals, plus an extra console for use with X Windows. You switch between them by pressing the Break key, then using the cursor control keys to select the required terminal, and pressing Break again to activate the selection.

This can be useful in a number of ways. For example, if you want to refer to the invaluable on-line manuals, but do not want to disturb the program that you are currently running, you can press Break, and log on at one of the other terminals to access them at your leisure. On occasion if a piece of software appears to have locked up, you can often switch terminals to extricate yourself - you are exhorted never to press Reset, because the system software could become corrupted.

A second terminal is also handy if you want to quickly log on as *root* to perform some system adjustments without quitting as a normal user. Finally, since all the terminals are multi-tasking, you can use one while performing a time-consuming task at another (e.g. formatting a floppy disc).

THE COMMAND LINE

UNIX is essentially a command line driven operating system. Typically a user would type the name of a command (similar to an Archimedes star command) at the

prompt, followed by a number of arguments which might specify options, and possibly the names of files to be used for input and output of the command. Sequences of such commands can be stored in so-called script files, and these will be executed in sequence as the script file is read. This has its parallel in Archimedes Obey files, even to the extent that some of the commands have the same or similar names - *echo* for example echoes succeeding words to the screen both on RISC OS and UNIX. Acorn's system variables also have a very UNIX feel to them. For example, the UNIX system variable *$HOME* contains a default path for the current directory command, and you can find out its contents by typing *echo $HOME*.

The designers of UNIX were not keen on typing, and most commands have somewhat cryptic names: *mv* for move, *rm* for remove, *cp* for copy, *ls* for list directory contents (Acorn's *cat) and so on. Thus to copy the file *myfile* in the current directory to the directory *DEST* (also in the current directory), you would type:

```
cp myfile DEST
```

Directories are hierarchical like those in the ADFS, and paths are denoted by a series of slashes, the first signifying the root directory ($ in Acornspeak). Thus:

```
/home/myfile
```

refers to the file *myfile* situated in the directory *home*, which is itself situated in the root. To copy this file to the subdirectory *mydir*, you would use:

```
cp /home/file /home/mydir
```

DIRECTORY STRUCTURE

When using a stand-alone Archimedes to run RISC iX, the operating system is largely disc-resident, and your main UNIX drive has a set hierarchy of directories built into it, many of which are replete with files. Most of the important system files are in directories found immediately within the root directory. The root also contains a directory called *home*, and it is this which holds directories created for each user. As the system administrator installs a new user, so a subdirectory of /home is automatically created bearing the id of the new user. When RISC iX is first installed, there is just one such user named *guest*, and you can log on as *guest* in your initial exploration of the system.

A DIY OPERATING SYSTEM

Although the UNIX operating system is extremely powerful, it is constructed in a very simple manner. Each one of its multitude of commands corresponds to a binary file of the same name stored in one of the system directories. When a command is entered, it is processed by the command line interpreter called the *shell*, which then finds and executes the corresponding binary files. In some respects, this is a bit like RISC OS without the ROM. In other words, when you issue a command at the RISC OS star prompt, if its name does not match any star command known to RISC OS (or the RAM-based extension modules), an attempt is made to load and execute a file whose name matches that of the command.

Virtually all of the UNIX commands are sourced in C, and exist as a file of the same name as the command. By cataloguing the /sbin directory (where some of the system binaries are stored) using a flag for extra information we can see the size of these files. If you enter:

```
ls -lg /sbin
```

you get a catalogue listing containing access states, date of creation and size of each non-hidden file. Most of the files are between 100K and 200K in size. For example, the *ls* file itself is 160K. Clearly UNIX does not have the enormous advantage of a shared CLib - each one of these files includes duplicated library functions.

From this it is clear why UNIX is such an enormous operating system: you get around 7 or 8 commands per megabyte of disc storage! Of course if you have a large mainframe, then 50 Mbytes is neither here nor there, and the massive advantage of being able to write your whole operating system in a high level language such as C, and tinker about with each individual command in an *ad hoc* way fitted the philosophy of the originators of UNIX to a tee. The wonder is that it has been possible to specify standard definitions of the

operating system to which anyone has been prepared to adhere!

PIPELINES

One of the features for which UNIX is known is the ability to pipeline a series of commands. For example, the command:

```
ls | lpr
```

will list the contents of the current directory to the printer. It does this because the bar character instructs the shell to connect the output of the first command (which catalogues the disc) to the input of the second which sends output to a printer. Multiple pipes can be set up in this way, and each component operates simultaneously, with the second processing data as it begins to emerge from the first, and so on right down the chain. For example, the following:

```
cat file1 file 2 | sort | lpr
```

will concatenate the two files *file1* and *file2*, then sort them line by line into alphabetical order, and print the result. As you can imagine, pipelines provide a very powerful tool, and allow new commands to be made up from combinations of others.

USING FLOPPIES

If you are using a stand-alone UNIX work station, you will almost certainly need to use floppy discs at one time or another. To this end, a whole battery of commands is provided to handle different formats. If you are transferring from one UNIX workstation to another, then you can use the standard commands *tar* or *cpio*, both of which can be used for backing up UNIX files onto tape or other media. To use with the Arc's 3.5 inch floppy, you just issue the command *ffd* to format it, then *tar* or *cpio* with appropriate parameters to copy files across.

Additionally, RISC iX provides special sets of commands for handling ADFS and MS-DOS format files. To give an example, the following command will format a floppy to ADFS D format (E is not supported), give it the name "FromUNIX", and save the files *file1* and *file2* to it from the UNIX's CWD (current directory):

```
wradfs -fia -n "FromUNIX" file1 file2
```

Whole directories can be copied in this way, making file transfer relatively painless.

Unfortunately you cannot catalogue ADFS floppies from UNIX with the normal *ls* command - but this is only to be expected. You must use the special ADFS equivalent *adfsls*.

EDITING WITH UNIX

Users of RISC iX, and indeed of UNIX in general, are spoilt for choice when it comes to text editors. RISC iX comes with no less than six:

ed	line editor
vi	screen-based editor
edit	simple line editor
red	so-called restricted editor
emacs	powerful screen-based editor
xedit	screen-based interactive editor which runs from the X Window system.

Of this motley selection, the RISC iX manual treats both *ed* and *vi* in some detail. But the manual rightly warns the reader that even though they are both widely used in the UNIX community, neither were designed with the novice in mind, and that many of the commands may appear "slightly esoteric or cumbersome".

Those used to the convenience of RISC OS will find most of these editors extremely primitive. The two exceptions to this are *xedit*, which is designed to run under the multi-tasking X Windows environment (more on this next month), and *emacs*. This latter is an extremely sophisticated screen editor with masses of features; and one which can run stand-alone or as a task within X Windows.

Emacs is documented in the online manual pages, and you can run it by typing:

```
/usr/new/emacs
```

If you try it out, beware that the Ctrl-h Help option is not for novices. If you get stuck, and cannot get out of *emacs*, you may need to do some console swapping. For those who would like to run *emacs* under RISC OS, there is a version of it on David Pilling's disc number 1, "Emacs".

We will round off this article next month with a look at using X Windows, the graphical user interface for UNIX supplied with RISC iX. RU

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Acorn's new machine, offering RISC OS 3, multisync monitor, ARM3, and 40Mb hard disc. A5000 computers are normally shipped with 2Mb of RAM, but **currently an extra 2Mb (4Mb total) is supplied free of charge with the systems below;**

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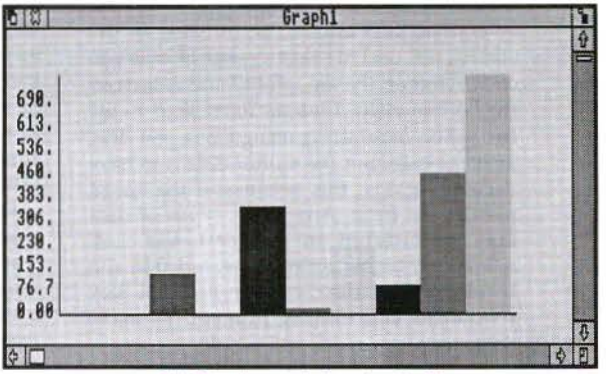
CalcSheet

Reviewed by John Schild

CalcSheet is a straightforward spreadsheet designed specifically to run on smaller systems in the Archimedes range of computers. While it shows distinct potential I think it may ultimately suffer from having been brought to the reviewer's notice too early in its development - but more of that later. For the benefit of any who may not have met this particular life-form, a spreadsheet is a software tool in which the workspace is divided into cells which may be related to one another by any of a wide range of functions and mathematical operators. The cells, defined by the intersection of a column (vertical, identified by the letters a,b,c etc.) and a row (horizontal, identified by the numbers 1,2,3 etc.) may contain numbers, strings or formulae. The major use of spreadsheets is probably financial analysis or forecasting, but many people use them for more humble things like keeping track of bank statements, or indeed any application involving rows and columns of numbers.



CalcSheet's graph drawing facility

PRESENTATION

CalcSheet is supplied on a single floppy disc without any form of copy protection. The ring-bound manual of some 170 pages which accompanies the software is clearly printed and well set out; the list of over 60 functions is particularly helpful. There are some errors and omissions which betray this as very much a first edition. The page headed *Calculate* is quite blank and there are several wrong page references in the index, and I think it would have been nice to see some screen shots illustrating principal functions, as well as some kind of tutorial section.

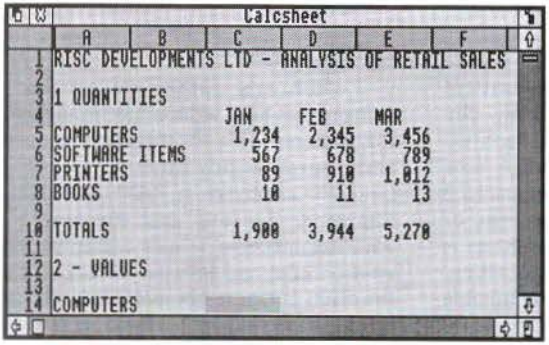
DESCRIPTION

CalcSheet's author claims that the software has been written specifically to cater for machines with one megabyte of memory and a single floppy drive. It occupies just over 200 kilobytes of RAM, and uses the Shared C Library and Floating Point emulator modules. It runs within the Wimp environment and because of its small size, the claim is that it can multi-task with other applications on a one megabyte computer. Data storage has been optimised to save RAM and disc space and to speed up calculations, and the application transfers effortlessly to a working disc, hard or floppy.

Spreadsheets of 10 million cells are theoretically possible, and sixteen sheets may be held in memory at once, but I missed a facility I long to see in any spreadsheet application: the option to open more than one window onto the same sheet so that while data is entered in one window, the results may be viewed in another - really helpful when using a spreadsheet for *what if?* queries. Once saved, spreadsheets may be reloaded either by double-clicking on their filer icons or by dragging them to the application icon on the icon bar.

STRUCTURE

Double-clicking on the application icon in a directory viewer loads it to the icon bar, and clicking on the icon opens up the spreadsheet window and a data entry window. Clicking with the Select button will select the cell under the pointer as the current cell, and to select a range of cells you click Select on the top left cell and Adjust on the bottom right. I would have liked to see the option of selecting using a box you drag over the cells, but the author claims to have decided against this because of the speed penalty; so be it. Any of six types of data may be entered in any cell, viz: cell reference, number, string, date, function and formula. Familiar cursor control key sequences and editing procedures make data entry very quick and simple.



CalcSheet's conventional spreadsheet presentation

Clicking Menu over the spreadsheet window brings up the main menu with six principal options allowing the contents of a cell or range of cells to be copied, moved, blanked, deleted, inserted or replicated. Other main menu options lead to sub-menus providing for spreadsheet storage, data export, printing, default setting and graph production. A macro writing facility is also provided. Each of these functions is worthy of a brief description.

STORE - Clicking on any of the store options opens up a RISC OS save box in which the file can be named and either dragged to a directory viewer, or saved under the entered name. An auto-save facility is provided, the user determining the save interval. *Store* saves the entire spreadsheet in native mode, and *CSV* outputs comma separated values in the form of a text file for importing into other applications. The separation character can be changed from the default comma to any other ASCII character that might be preferred. A *Fixed save* option allows output in spreadsheet form with only values saved, not the accompanying formulae and functions. The *Print* option is contained within this menu, but seems in practice to offer nothing more than the option of dragging a text file to the printer icon on the icon bar. No printer formatting is possible from within the program, and I was interested to discover that my Laser Direct icon simply ignored the offered file.

FORMAT - A nice feature of CalcSheet is that when strings are left justified, they are allowed to spill over into adjoining cells if these are not already occupied. Using the format options, strings may also be right justified or centred at will, but are then truncated if too long for their assigned cells. Column width and number of decimal places can also be assigned either globally or locally using this option. I was disappointed to find that neither rows nor columns can be protected against accidental blanking or deletion, which in my view is a hazardous omission.

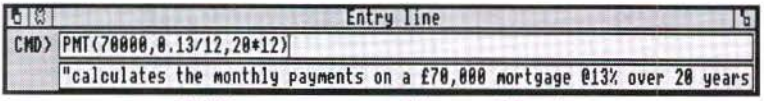
GRAPH - Graphs can be created, viewed and stored within a spreadsheet in most of the familiar forms: bar, line, multi-bar, pie chart, stacked 100, and stacked bar. As far as it goes this facility seems to work well, but is of very limited value since the graphs may be viewed only alongside a spreadsheet. No option has been included to export a graph to a disc file or graphics or DTP window. Graphs are also (presumably) presented as bit mapped images, rather than Draw files, so even if they could be exported they would be more hungry for RAM and disc space than might be desirable on a small system.

MISC - A miscellaneous menu allows such mundane operations as colour choice, and the copying of values only (not formulae etc.) from one part of a sheet to another.

MACRO - Finally, the application can be set to record all key strokes, which are then saved as a macro and may be re-run, either to reconstruct a spreadsheet, or to repeat a frequently employed sequence of key strokes. Macros are saved as editable text files.

CALCSHEET IN USE

I must now justify my earlier comment that CalcSheet may have suffered from being exposed too early to the reviewer's scrutiny. My tests were carried out on version 1.02 using a first series Archimedes 440 with a hard disc and a multi-sync monitor, and I have to report my disappointment that the application was presented with a number of major bugs and with some limitations which I would have thought quite unacceptable at this stage in the development of the Archimedes and 'A' series computers.



CalcSheet supports a useful range of functions

Because I use *Impression* extensively, I keep my Desktop in Computer Concepts' *New Mode 82*, and I have something like 70 outline fonts in the main fonts directory. On first loading Calcsheet I heard the familiar warbling of my hard disc as it scooped up the entire !Fonts collection, but then it collapsed with a fatal error 5 (reminiscent of Edit's party trick!). Since it does not use the outline fonts why does it even need to look at them? It will not tolerate new modes, and crashed when I tried to run it in any modes other than the 80 column native modes, which is not very useful when a large spreadsheet is in use.

Having accepted these limitations, I attempted to evaluate Calcsheet by replicating a sheet I run frequently from Pipedream, which checks actual against budgeted expenditure. Unfortunately the presence of a number of serious bugs prevented me from getting very far. I will describe just two of the more dramatic...

On several occasions, when I had an expression displayed in the data entry window, I pressed Return to load it to a cell. Nothing happened on the first press; on the second press the entire application disappeared from the screen without a word of farewell. Still persevering, I continued for a while and then used the Store option to save my half built sheet. I later loaded CalcSheet to the icon bar and double-clicked on my test file in a directory viewer. Quite unexpectedly it loaded a second application icon to the icon bar, and the spreadsheet window when opened was completely empty; all my data had been lost. At this point the irritation became too much and I suspended my examination.

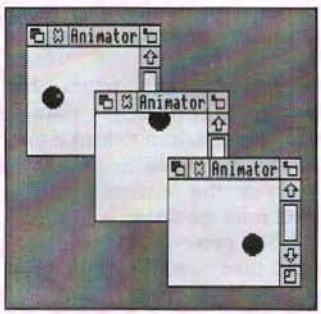
Inevitably, CalcSheet cannot be recommended in its present state of development. Work needs to be done both to eliminate the residual bugs and to overcome some of the limitations I have described. Ironically, I find myself wondering whether by the time the program has grown to the point where it can receive a positive recommendation, it may well be too big to meet its designer's aim for it to run on a minimum configuration computer. Ultimately this may not prove too important as an increasing number of users upgrade their machines to two or more megabytes of RAM. In conclusion, I hope that the programmer will be sufficiently encouraged by the undeniable potential of this product to persevere to a successful outcome.

Product	*CalcSheet*
Supplier	*Trail Software*
	P.O.Box 283 London SW11 2LL
	Tel. 071 924 4880
Price	*£99.00 ex VAT*

RU

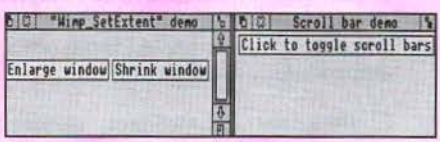
RISC User Disc Contents Jan

Desktop Animator



An application which displays a bouncing ball inside a window in the Desktop. This forms the first part of a two part article on displaying multi-tasking animations.

Exploiting the Wimp (Part 3)



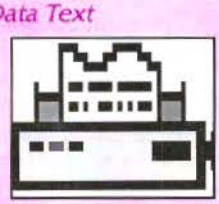
A demonstration of the procedures and functions described in this issue.

Multi-tasking Maestro File Player

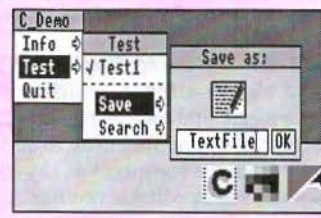
This allows you to play Maestro files in the background in the Desktop, without having to load Maestro first. The version on the disc contains various enhancements over the listing in the magazine, including a repeat loop option for the current tune, and the ability to set up a sequence of tunes to be played.

The 80 Column: PrData Text Translation Files

Special files to add to a printer driver's PrData file to enable international characters to be printed out.



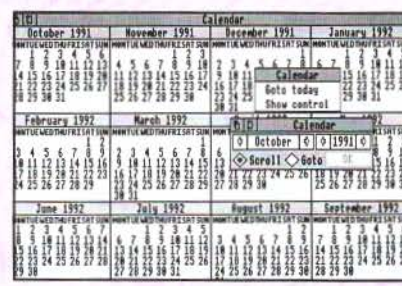
Using ANSI C (Part 7)



Example of how to implement a save box in an application written in C.

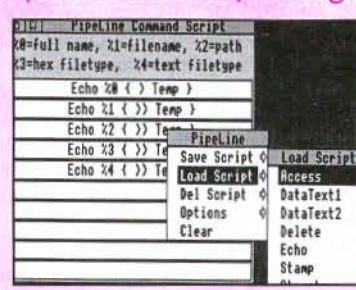
ADDITIONAL ITEMS REFERRED TO IN THE MAGAZINE

Calendar



A seasonal multi-tasking application that displays the calendar for any year.

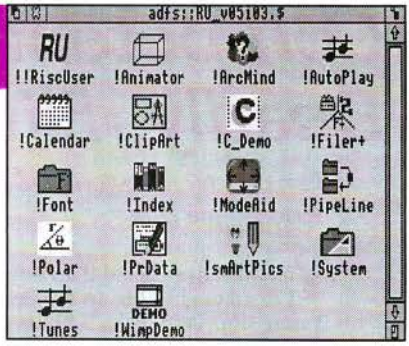
PipeLine: OSCLI Script Manager



A very powerful application that allows multiple operating system commands to be performed on files that are dragged to the icon bar. Example scripts make the PipeLine behave like a Desktop dustbin, a recursive file locker/unlocker, a subdirectory lister, and many more.

All of these powerful applications and

ary/February 1992



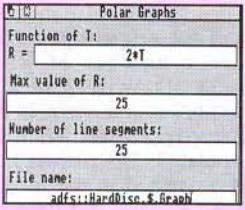
This month's disc menu

smArt Example Draw Files

Four high resolution Draw files created by the smArt package reviewed in this issue. The files are a motorway map of Great Britain (including town names etc.), a face, a fashion model and a room in a house. They can all be used in DTP etc. as clip art.

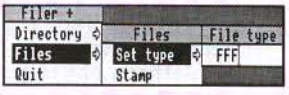
BONUS ITEMS

Polar: Graph Plotting Application



This application enables graphs to be generated in the form of Draw files using polar co-ordinates. The accuracy of the curves and the scale of the axes are both definable, and the application is fully multi-tasking.

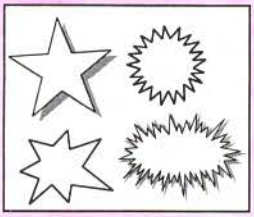
Filer Plus



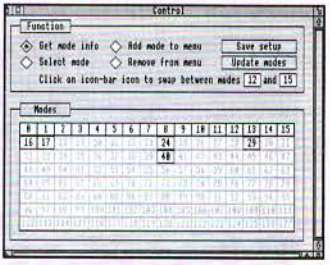
This application allows you to datestamp files, change their filetype, and open directory viewers for the printer and serial ports. This application is referred to in *Into the Arc*.

Draw Clip Art

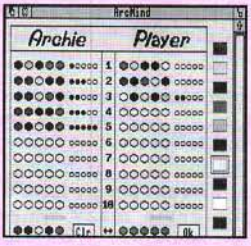
Several Draw files containing various borders and flashes, dozens of arrows and many more bits and pieces for use in DTP and any Draw files.



Mode Aid: A Desktop Mode Utility



This application provides a neater way of changing modes than the Palette utility. It also provides full information about any modes available, and allows the user to switch between two configurable modes at the click of a button.



ArcMind, The Code Breaking Game

A multi-tasking version of the popular Master Mind code breaking game.

Mercury Outline Font

An outline font for use with the outline font manager.

ArcScan Data

ArcScan indexes for this issue of RISC User and BEEBUG Vol.10 No.7.

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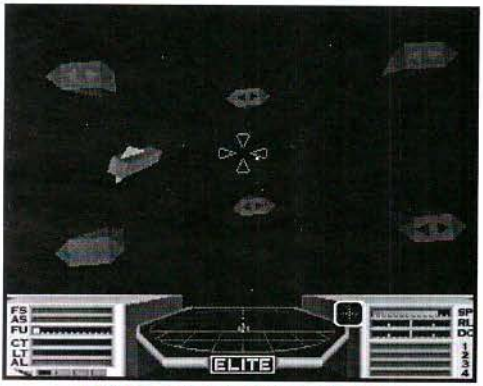
Competent, Dangerous, Deadly, Elite...

Peter Rochford reviews the long awaited Archimedes version of the classic space game Elite..

You must have heard it all before - "When I first bought Elite on my Beeb, I played it non-stop for weeks"; "Elite is the best computer game ever"; "If you haven't heard of Elite (yes, both of you) then this is what it's all about...". Well, it's now available on the Arc, so what's the fuss all about?



Getting your own back on the Police!

Elite became a cult game as soon as it was released on the Beeb in 1984 and was soon converted to just about every other popular home micro. It is a game that consists of many facets: people have tried to categorise the game many times, but essentially it is a mixture of all sorts of game aspects - arcade, adventure, strategy - and this is one of the secrets of its success. You pilot your Cobra space ship from one galaxy to another, stopping off at various planets to buy and sell cargo in an attempt to increase your wealth and status. As you do so, you can buy a host of extra equipment for your craft to increase its strength and capacity, enabling you to trade more efficiently.

As you can imagine, it is not just a case of hopping round the universe and trading your wares. There are lots of other people out there in the vastness of space who are only too ready to destroy your craft and steal your precious cargo, so you need to become experienced at destroying other ships - this is where the extra equipment you have earned (like more powerful lasers and energy bombs) comes in handy. You can also adopt the role of space pirate and attack other craft in an attempt to steal their cargo; this is a quick way of obtaining a large bounty but is fraught with danger and is likely to attract the wrong sort of attention, leading to an early demise. The more ships you destroy, the higher your rating, and the aim of the game is to raise your rating to *Elite* - a feat that can take months of play!

The Archimedes version of Elite takes all the elements of the original game and adds to them in a number of ways. Graphics are solid 3D, instead of wire frame, with a smoothness of movement that is fluid and flicker free even when the screen is well-populated. The planets have had a bit of texture added in the form of dots circling on the surface, but they still lack any real 3D perspective, as do the suns. Some planets have little grey moons, but these are textureless discs that rotate around the planet at impossible speeds, so they didn't add a great deal to the atmosphere. Sound has been enhanced too, but perhaps not to the degree that you might have expected.

You can control your spaceship by mouse as well as keyboard (as you would expect), although using a joystick makes gameplay much easier; the manual calls the mouse "MOUS" (short for Motion Usher), which looks a little strange to begin with! A useful feature is that the game installs itself on the icon bar and allows you to drop in and out of it as you fancy, and options such as mouse sensitivity and sound volume are controlled from Desktop menus. If you have enough RAM and feel that way inclined you can have several versions running at once!

So what are the enhancements that will make you rush out and buy this game, if you are one of those who feel they have exhausted all the possibilities on the Beeb version? There are quite a few, and some are so subtle that on their own they may even seem trivial, but taken as a whole I feel that they make the game sufficiently different to offer a new challenge. For example, you can toggle the magnification of your scanner between normal and close up - handy for close combat.

Launching your ship from a space station now has an animated sequence that adds a little atmosphere, where before there was just a roar of white noise. Docking also includes a similar view of the space station's docking bays, albeit at a strange angle (usually!).

One major area of change is that all the craft you meet act more intelligently than before. For example, you can encounter police vipers flying in formation, and if they witness a misdemeanour (like you attacking an innocent trader), they will not sit around idly. It is possible to fly into a situation where a battle is already under way; you can join in if you desire, or keep your distance and watch as it progresses - then you can take the role of scavenger and move in and scoop up any cargo canisters that are floating around from destroyed vessels. There are also a number of new ships (like the Hognose ship, used by missionaries), but they are not explicitly listed in the documentation, so you will have to discover them for yourselves.

On the subject of cargo, it is now possible to identify the contents of some cargo containers enabling you to pick and choose what you wish to scoop up (for instance luxuries are bright pink and radioactives have a radiation warning on them). Another bonus is that now you can jettison your cargo - very handy if you are being pursued by a cargo hungry pirate. You can also drop some of your cargo to be used as target practice - but it's a very expensive way to practice!

Trading is now controlled by the mouse, and buying and selling is as simple as moving the pointer over the commodity and pressing Adjust (for buy) and Menu (for sell). I found that I kept getting the buttons mixed up and ended up *buying* cargo instead of selling it, and as the price for buying is different to that for selling (like in real stock markets) this mistake is an expensive one to make.

Another major area of change is missions. These are now far more daunting than before and will really put you under pressure, and this is where the apparently inconsequential comments in the manual come into their own.

So what else? The programmers have stuck quite rigidly to the design of the original, but I found this a little disappointing given the graphical capabilities of the Archimedes. So should you buy it? At £39.95 I feel that it is a mite expensive and may deter many from taking the plunge. Also those who had the original will notice that the manual is not as comprehensive as before (and has certainly lost most of the realistic atmosphere of the Beeb manual) and there is no novella included. The ships are no longer listed in the manual, and you no longer get a poster of them - seems rather cheeky when you consider the high price. There is also no key summary anywhere, which is annoying, especially as there are a number of new functions around.

But at the end of the day, this is Elite, it's on the Arc. Games players have been dreaming of an enhanced full colour version for ages, and I'm sure they'd pay any price for it. To those who have not yet played Elite on any machine, I can only say you have missed out on one of the greatest computer games ever, and as an Arc owner, you now have the chance to take part. Right on Commander!

Product	*Elite*
Supplier	*Hybrid Technology* *88 Butt Lane, Milton* *Cambridge CB4 6DG* *0223 861522*
Price	*£39.95 (inc. VAT)*

RU

Stop Press:

Hybrid have just released a new version of Elite called "Elite Gold Edition". The software hasn't changed but the manual has been split in two (the contents is the same, unfortunately), and you now get a set of glossy ship identification cards, a trading pad to keep track of your financial dealings, a new control key strip, and a little poster of the artwork. If you have already bought Elite and you want to upgrade, simply send your control key strip to Hybrid with your details. Those who didn't buy the game direct from Hybrid should also enclose a £3 cheque.

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A Desktop Player for Maestro Files

Alan Wrigley describes a modification to RISC User's Maestro file player which makes it multi-tasking.

Back in Volume 1 Issue 9, RISC User published a Basic program which enabled Maestro tunes to be played without having to load Maestro itself. This program has been included a number of times on magazine discs along with various sets of Maestro files, most recently on the disc for Volume 4 Issue 9.

It is possible with very little effort to make this program multi-task, which it was not originally designed to do. This means that it can be installed on the icon bar, and dragging any Maestro file to its icon will result in the tune being played while you get on with some other task. All that is necessary is to add procedures which initialise the program as a Wimp task, create and handle a menu for the icon bar, and receive messages when files are dragged to the icon.

The original program was built around a procedure PROCplay_bar, which plays one bar of the tune at a time. In the new version, which is now called *AutoPlay*, PROCplay_bar is called whenever the Wimp returns a null reason code. Instead of loading a file by entering its name, you now simply drag it to the icon bar icon, or double-click on a Maestro file once AutoPlay has been installed. The icon bar menu has just two options: *Quit*, which performs its usual function, and *Stop*, which allows you to stop the current tune playing. If there is no tune playing, this option is greyed out. Both these options take effect at the end of the current bar, so there may be a short delay before the music stops.

To create the new application, add listing 1 to the original program as listed in the Volume 1 Issue 9 magazine. Some of the lines are replacements for existing lines, while others are new ones. If you are modifying the program from one of the magazine discs, delete line 80 from the original and then add 20 to all line numbers in listing 1 from 70 onwards (i.e. line 70 in the listing here replaces line 90 in the original program, and so on). Save the complete program as *!RunImage* inside an application directory called *AutoPlay*, and add !Run and !Sprites files as usual. The !Run file should be an Obey file containing the following lines:

```
If "<AutoPlay$Flag>"="xx" then error "Y
ou cannot install two copies of AutoPlay"
Set AutoPlay$Flag xx
WimpSlot -min 64K -max 64K
Run <Obey$Dir>.!RunImage
```

The !Sprites file should contain a 34x17 pixel sprite called *!autoplay*. If you have one of the magazine discs containing Maestro files, you could use the sprite which is currently called *!music* and rename it to suit the new application.

In the original program, various blocks of memory were dimensioned according to data which was read in from the Maestro file being loaded. If this procedure were followed in the new version, eventually the program would run out of memory if you continue to drag files to the application, giving rise to an error as described in last month's *Technical Queries*. As a result, blocks have been dimensioned at the start large enough to cope with most Maestro files. Should any of your files generate an "AutoPlay cannot handle this file" error, you can increase the size of the blocks by altering the values in lines 450 and 1725 (currently 4096), and in lines 470 and 1762 (currently 2048).

This month's magazine disc contains an enhanced version of AutoPlay with several additional features. These include a repeat loop

option for the current tune, and the ability to set up a sequence of tunes to be played.

```
   10 REM            >!RunImage
   20 REM Version    A 1.3
   30 REM Author     Crosbie Fitch
   35 REM Mods       Alan Wrigley
   40 REM RISC User Sep 1988/Jan 1992
   70 PROCinitialise:PROCwimpinit
   75 ON ERROR PROCerror(REPORT$+" - int
ernal error code "+STR$ERL,1):END
   90 SYS "Wimp_Poll",&1832+mask%,bk% TO
 r%
  100 CASE r% OF
  110 WHEN 0:IF Playing% THEN
  120 :
  130 :
  152 ELSE
  154 mask%=1
  165 WHEN 6:IF bk%!8=2 AND bk%!12=-2 PR
OCmenu
  170 WHEN 9:PROCmenuselect
  175 WHEN 17,18:PROCmessage
  180 ENDCASE
  182 UNTIL quit%
  184 *Unset AutoPlay$Flag
  186 SYS "Wimp_CloseDown"
  350 UNTIL EOF#F% OR A% OR errflag%
  355 T%=TRUE
  435 errflag%=FALSE
  440 LOCAL S%:INPUT#F%,S%
  450 IF S%>4096 errflag%=TRUE
  455 Gate%=Music%+S%
  470 IF S%>2048 errflag%=TRUE:C%=7
  480 Fine%(C%)=Music%(C%)+S%
  495 IF errflag% PROCerror("File too lo
ng",0):ENDPROC
 1725 DIM Music% 4096
 1762 FOR N%=0 TO 7:DIM B% 2048
 1764 Music%(N%)=B%:NEXT
 2110 :
 2120 DEFPROCwimpinit
 2130 DIM bk% 512,menu% 100
 2140 DIM ind% 128,name% 12
 2150 quit%=0:mask%=1:Playing%=0
 2160 app$="AutoPlay"
 2170 SYS "Wimp_Initialise",200,&4B53415
4,app$
 2180 !bk%=-1:bk%!4=0:bk%!8=0:bk%!12=68
 2190 bk%!16=68:bk%!20=&10003002
 2200 $(bk%+24)="!"+app$
 2210 SYS "Wimp_CreateIcon",,bk%
 2220 ENDPROC
 2230 :
 2240 DEFPROCmenu
 2250 $menu%=app$:menu%!12=&70207
 2260 menu%!16=128:menu%!20=44
 2270 menu%!24=0:menu%!28=0:menu%!32=-1
 2280 menu%!36=&7400021+&400000*Playing%
 2290 $(menu%+40)="Stop"
 2300 menu%!52=&80:menu%!56=-1
 2310 menu%!60=&7000021
 2320 $(menu%+64)="Quit"
 2330 SYS "Wimp_CreateMenu",,menu%,!bk%-
60,184
 2340 ENDPROC
 2350 :
 2360 DEFPROCmenuselect
 2370 SYS "Wimp_GetPointerInfo",,bk%+256
 2380 button%=bk%!264
 2390 CASE !bk% OF
 2400 WHEN 0:Playing%=FALSE
 2410 WHEN 1:quit%=TRUE
 2420 ENDCASE
 2430 IF button%=1 PROCmenu
 2440 ENDPROC
 2450 :
 2460 DEFPROCmessage
 2470 CASE bk%!16 OF
 2480 WHEN 0:quit%=TRUE
 2490 WHEN 3,5:IF bk%!40=&AF1 THEN
 2500 bk%!16=4:bk%!12=bk%!8
 2510 SYS "Wimp_SendMessage",17,bk%,bk%!4
 2520 PROCload_music(FNstring(bk%+44))
 2530 mask%=0:PROCplay_start
 2540 ENDIF
 2550 ENDCASE
 2560 ENDPROC
 2570 :
 2580 DEFFNstring(ptr%)
 2590 a$="":WHILE ?ptr%<>0
 2600 a$+=CHR$?ptr%:ptr%+=1
 2610 ENDWHILE
 2620 =a$
 2630 :
 2640 DEFPROCerror(a$,x%)
 2650 !bk%=1:$(bk%+4)=a$+CHR$0
 2660 SYS "Wimp_ReportError",bk%,1,app$
 2670 IF x% THEN
 2680 *Unset AutoPlay$Flag
 2690 SYS "Wimp_CloseDown"
 2700 ENDIF
 2710 ENDPROC
```

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Formulae and Matters Mathematical

by Mike Williams

When I reviewed Computer Concepts' Equasor in RISC User Volume 4 Issue 10, I said that it was the only application of its kind available for creating mathematical expressions for inclusion in DTP documents and similar. In fact, I overlooked an implementation of TEX for the Archimedes (see this month's Postbag) which has been around for some time. This is widely used in the scientific world for originating all manner of scientific (i.e. mathematical) documents, from exam papers for students to expensive and highly technical treatises. That is the professional end of the market.

Just recently, another solution to the same problem has popped up, and although I have yet to see the full version, I was so interested that I immediately set out to find what it does, and to give a preview of this new product.

BestForm is one of several new Archimedes products from a German source, Klein Computer, who were at the Acorn User Show last October. Once BestForm is installed, you can open up a window in which a formula can be created, and this can be saved (or dragged to another application) as a Draw file.

BestForm has many similarities with Equasor, and some useful extras. Handling superscripts and subscripts (powers and indices) for any element is accomplished directly by using Cursor Up and Cursor Down - no need to select such a structure from a window. The same approach can be used to add limits to integrals and summations.

There are also some odd features: the Backspace key performs a normal delete function, while the Delete key deletes the character (or element) to the right of the caret. In writable icons which are used in some menus, Delete behaves as normal (for RISC OS).

A Greek font is supplied with the full version (so it is claimed), but you can choose any other outline font available to you for non-Greek characters.

BestForm has a number of menus from which elements can be selected for inclusion in a formula. The quaintly named *Bigs* includes such things as integral and summation signs. A wide variety of brackets are provided - these are normally allocated in pairs, but single brackets can be used as well. *Bigs* and *brackets* can only be deleted by selecting the element in question and clicking the Del option from the corresponding sub-menu.

The structures sub-menu allows three styles for fractions to be selected, and most usefully a matrix can be created with a user-defined number of rows and columns. There is also a feature which allows simple and effective editing of matrix elements, including mirroring in both the x and y directions and transposition.

A further sub-menu allows the user to choose characters from a number of sub-windows - arrows, comparison symbols, set operators, other mathematical operators, and a number of special symbols.

With only the demo version to hand I was unable to assess the quality of any printed results - though the screen images appeared satisfactory. There will also be a 50 page manual with the full version, though I hope the publishers manage to improve the clarity of the English used compared with the notes on the demo disc.

It is always good to see users offered a choice of products, and in the field of formula generation there are now three, Equasor from CC, TEX, and now BestForm. At a price of £49 this is a product which looks well worth investigating if this type of application is what you need.

Product	*BestForm*
Supplier	*Klein Computer* *Hasslocherstrasse 73,* *D-6090 Ruesselsheim, Germany.* *Tel. 010-49-6142-81131* *fax 010-49-6142-81256*
Price	*£49.00*

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Exploiting the Wimp

Part 3: Altering window work areas, creating submenus on the fly and handling writable icons

by Mike Ironmonger

Last month's article finished with a look at the SYS call "Wimp_SetIconState" which allows an icon's flags to be changed. If the icon is indirected, its data (text or sprite name) can also be changed, which leaves the bounding box (size) as the only feature of an icon that is fixed. In the case of windows, this situation is reversed - a window's flags are fixed but its size can be altered. By this I don't mean its visible size on the screen, but its work area extent - the whole of the area that you can see by dragging the window's scroll bars. The obvious use for this feature is in a word processing window which could be extended as text is typed in.

Changing the size of the work area is done with the SYS call "Wimp_SetExtent" (see Figure 1) which you can use via the procedure PROCset_extent. This requires five parameters: the window handle followed by the four co-ordinates that define the new size of the work area (supplied in the same order as the SYS call). These co-ordinates should be specified in a whole number of pixels, otherwise strange effects can occur. Also note that when you change a window's work area, you must re-open the window and force it to be redrawn, both of which are done by PROCset_extent.

On entry:	
R0 = window handle	
R1 = pointer to block	
R1+0	work area minimum x
R1+4	work area minimum y
R1+8	work area maximum x
R1+12	work area maximum y

Figure 1 Parameters for "Wimp_SetExtent"

If a window's work area extent is changed when the window is on screen, its scroll bars are redrawn to reflect the new size of the window, but the scroll offsets themselves don't change. To alter the scroll offsets, use the procedure PROCscroll_window. This requires three parameters - a window handle and the new x and y scroll offsets for the window.

ALTERING WINDOWS

Although I stated above that an icon's bounding box and a window's flags can't be altered, I should have said that there isn't a call to change these, because there is a way it can be done. The technique is used by FormEd, and the idea behind it is quite simple. Firstly SYS "Wimp_GetWindowInfo" is called to obtain the full details of a window's definition, and then the window is deleted. The stored definition is then changed as required, and used to create a new window which replaces the old one. This new window will probably have a different handle, but if you open the window, it will appear in the same position as the old one, and in the same place in the stack of windows.

An example of this technique is provided by the function FNtoggle_scroll_bars which alternately removes and replaces the scroll bars. It requires a window handle and it returns the handle for the new version of the window.

SUBMENUS

Submenus that appear automatically are one feature of the Wimp that helps cut down the work of the programmer, but in some cases they can be a hindrance. As usual, the easiest way to explain this is with a simple example. Consider a menu where each item is the name of a car and has a submenu that leads to a window showing details about the car. With automatic submenus, a separate window would have to be created for each car and attached to each menu item. With a long list of cars this would become

impractical. Ideally what would be required is to attach the same window to each menu item and fill in the relevant icons in the window appropriately whenever the window appears as a submenu.

Bit 3 of a menu item's flags lets you do this by changing the way the Wimp handles submenus. If a menu item has this bit is set, moving the pointer over the right arrow of the item will cause a MenuWarning message (number &400C0) to be generated. As with all messages, the data that's specific to the message is located from the sixth word of the message block onwards:

```
block%+20  pointer to submenu
block%+24  x co-ordinate for submenu
block%+28  y co-ordinate for submenu
block%+32  item selected in main menu
block%+36  item selected in first
submenu
.....
.....
block%+..  -1 to end list
```

When you receive this message you should create the appropriate submenu structure and call SYS "Wimp_CreateSubMenu" to make the submenu appear. This call requires three parameters, which can all be obtained from the message block:

R1 = pointer to submenu
R2 = x co-ordinate
R3 = y co-ordinate

Note that the term 'pointer to submenu' above can mean either a pointer to a menu structure or to a window handle (as in the car example). This is also the case for the call SYS "Wimp_CreateMenu" which opens the initial menu. The main use for this is when you want to open a window that usually appears as a submenu - e.g. a save window that can be popped up by pressing a function key. This is preferable to opening the window via the call SYS "Wimp_OpenWindow" because the window will behave exactly as it does when accessed via the menu - disappearing when Escape is pressed etc.

WRITABLE ICONS

An important part of most Wimp applications is the dialogue box, and most dialogue boxes feature several writable icons into which the user has to enter data. To ensure that all dialogue boxes perform in a consistent manner, Acorn have defined how keypresses should move the caret between the writable icons in a dialogue box:

Pressing Cursor Down should move the caret into the next icon. If the caret is in the last icon, pressing Cursor Down should move it back to the first.

Pressing Cursor Up should move the caret into the previous icon. If the caret is in the first icon, pressing Cursor Up should move it to the last icon.

Pressing the Return key should move the caret into the next icon. If the caret is in the last icon, pressing Return should have the same effect as clicking on the OK icon. If the dialogue box was part of a menu structure, the menu should then be closed. Whenever the caret is moved into another icon, it should be placed at the end of any text in the new icon.

To implement these rules I've written the function FNmove_caret. To use this you first need to ensure that the writable icons in your dialogue box are in numerical order. They don't have to be numbered consecutively, but the first should be numbered less than the second, the second less than the third, etc. This is a simple task with FormEd: just click over each icon and use the Renumber entry in the main menu.

The function FNmove_caret should be called when you want to move the caret into the next or the previous icon in response to a keypress. It requires three parameters - the window handle, the number of the icon where the caret is currently located and the direction of the move (+1 to move to the next icon, -1 to move to the previous icon). The function may look a little complicated, but basically it gets all the details of the window and then checks each icon in turn (starting from the current one) until it finds a writable icon. It then obtains the length of the text (if any) in that icon; calls PROCcaret_to to place the caret at the end of that text; and returns the number of the icon.

Note that when the Return key is pressed, you not only have to move the caret but you also have to check whether the caret was in the last icon of the dialogue box. If it was, you should perform the same action as occurs when the OK icon is clicked (e.g. execute PROCaction - say). All of this can be accomplished with a single line:

```
IF icon%>=FNmove_caret(window%,icon%,
-1) THEN PROCaction
```

On entry:

R0 = window handle (-1 to turn caret off)
R1 = icon handle (-1 if no icon)
R2 = x co-ordinate
R3 = y co-ordinate
R4 = height of caret
R5 = index into string

x and y are relative to the work area origin of the window. If R4 or R5 are -1, the Wimp calculates them automatically.

Figure 2. Parameters for "Wimp_SetCaretPosition"

As mentioned above, PROCcaret_to is used to place the caret in the icon. This procedure requires a window handle, an icon handle, and the position in the text (in the icon) where the caret is to be placed. It's a simple procedure, and just calls SYS "Wimp_SetCaretPosition" (see Figure 2) with x, y and height values of -1. The Wimp then calculates these according to the position and size of the icon, and puts the caret in the icon.

In the next article I'll be covering the topic of in-memory data transfers between applications.

In part 1 of this series I said that the block of memory into which a window definition is loaded should be 88 bytes plus 32 bytes for each icon in the window. In fact, it also needs to store the indirected data of the window and all its icons. You need take this into account when you dimension block%, so that it can accommodate the definition and the indirected data of the largest window. Similarly, the third parameter of a call to FNload_template will need to be changed if the window template being loaded has any indirected data. I am most grateful to Rolf Herschel for pointing this out.

```
 1000 DEF PROCset_extent(window%,!block%
,block%!4,block%!8,block%!12)
 1010 SYS "Wimp_SetExtent",window%,block
%
 1020 !block%=window%
 1030 SYS "Wimp_GetWindowState",,block%
 1040 IF (block%!32)AND(1<<16)<>0 THEN
 1050  SYS "Wimp_OpenWindow",,block%
 1060  SYS "Wimp_ForceRedraw",-1,block%!
4,block%!8,block%!12,block%!16
 1070 ENDIF
 1080 ENDPROC
 1090 :
 1100 DEF PROCscroll_window(window%,x_of
fset%,y_offset%)
 1110 !block%=window%
 1120 SYS "Wimp_GetWindowState",,block%
 1130 block%!20=x_offset%
 1140 block%!24=y_offset%
 1150 SYS "Wimp_OpenWindow",,block%
 1160 ENDPROC
 1170 :
 1180 DEF FNtoggle_scroll_bars(window%)
 1190 !block%=window%
 1200 SYS "Wimp_GetWindowInfo",,block%
 1210 SYS "Wimp_DeleteWindow",,block%
 1220 block%?35=block%?35 EOR &70
 1230 SYS "Wimp_CreateWindow",,block%+4
TO window%
 1240 !block%=window%
 1250 SYS "Wimp_OpenWindow",,block%
 1260 =window%
 1270 :
 1280 DEF FNmove_caret(window%,icon%,inc
%)
 1290 LOCAL num_of_icons%,flags%,deleted
%,btype%,ptr%,len%
 1300 !block%=window%
 1310 SYS "Wimp_GetWindowInfo",,block%
 1320 num_of_icons%=block%!88
 1330 REPEAT
 1340  icon%=(icon%+inc%+num_of_icons%)M
ODnum_of_icons%
 1350  flags%=block%!(108+32*icon%)
 1360  deleted%=((flags%>>23)AND1)=1
 1370  btype%=((flags%>>12)AND%1111)
 1380 UNTIL NOT deleted% AND btype%=15
 1390 ptr%=block%!(112+32*icon%)
 1400 len%=0
 1410 WHILE ?ptr%>30
 1420  ptr%+=1:len%+=1
 1430 ENDWHILE
 1440 PROCcaret_to(window%,icon%,len%)
 1450 =icon%
 1460 :
 1470 DEF PROCcaret_to(window%,icon%,ind
ex%)
 1480 SYS
"Wimp_SetCaretPosition",window
```

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Programs can be written in any language as long as they perform their stated task. Many of our programs contain large chunks of BASIC with ARM code in the areas that it is needed. BASIC on the Archimedes is a very powerful language and we do not attach any snob value to its use. If your program does what is meant to do then thats all we are interested in. Why not join the top team on the Archimedes. You get the support of our in-house team, privileged access through us to Acorn and invitations to our informal programmers seminars.

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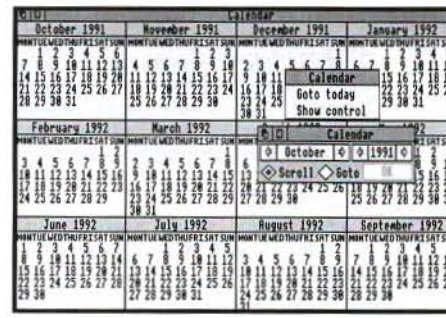
Calendar

by Mike Ironmonger

Calendar is a seasonal application which runs from the Desktop, and will display the calendar for any year. Today's date is highlighted, and checking the calendar for any other year is very easy. There is a dialogue box in which any month of any year can be entered, or you can step through the years and months one by one.

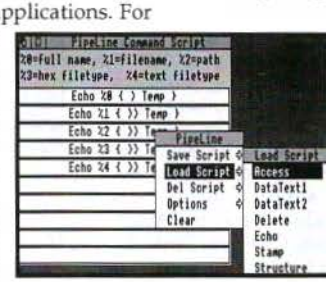


For reasons of space, both these items are available on this month's magazine disc only.

PipeLine

by Mark Moxon

PipeLine is a very flexible application that allows files and directories to be operated on using any command that the operating system can recognise (i.e. star commands). Depending on the instructions typed into the application, the PipeLine can act as an endless variety of applications. For example, the PipeLine can act as a Desktop dustbin, deleting locked files as well as unlocked ones; it can act as a date stamper; it can unlock files and directories recursively; it can change filetypes of files; it can behave "intelligently" and only delete files of type Data, for example; it can delete all files in a directory structure, leaving the structure intact... the possibilities are endless.



The real power of this application appears as two tickable options in the menu structure: Directories and Recurse. If Directories is ticked then directories will be operated on by the PipeLine, otherwise they won't be touched at all; thus with the date stamp example above you would turn Directories off, as trying to date stamp directories gives an error. If Recurse is turned on, all subdirectories etc. will be operated on, otherwise just the objects actually dragged will be operated on.

Script files can be saved, loaded and deleted, all from an easy-to-use menu structure. As well as full instructions, there are also the following example scripts included on the disc: a file deleter (which also deletes locked files), a subdirectory lister, a script that lists all files of type Text in a directory structure, a recursive file locker and unlocker, a date stamper, and a script to delete files in a directory but leave the structure intact. These are all completely customisable (for example, files of type Data can easily be listed instead of files of type Text). This is one of those applications that will prove invaluable!

RU

WP/DTP DeskEdit Hints

Hints on using DeskEdit in wordprocessor mode compiled by Graham Carter

WORDWRAP BY DEFAULT

If you include the letter D in the system variable *DeskEdit$Options*, wordwrap will be switched on by default when any new DeskEdit window is created. This undocumented feature is useful if you are using DeskEdit more for word processing than for program editing.

USES FOR UNDO

There are many occasions when a single press of Undo (F8) will achieve exactly the desired effect.

For example, if you have hit Ctrl-Up instead of Ctrl-Shift-Up, and have therefore lost your place - just hit F8, and you are back where you started.

The same applies if you have accidentally deleted a character or two - though here pressing Insert will also do the trick.

Undo is also very useful if you are in Wordwrap mode, and DeskEdit wordwraps a paragraph of text during editing at a point where you did not want it wordwrapped. Simply press Undo, and it will all be unwrapped. Then insert the code to prevent wrapping on the line in question.

USING THE INDEXING FINDER

The indexing finder allows you to place a menu at the top of a document (or program source), in such a way that clicking Alt-Select against any item (or pressing F11) takes you to the corresponding section in your document. If you do not want this index to be visible in the printed document (or in files ported via the special save options), simply preface each index line with the "hide" character (ASCII 133), generated by pressing Ctrl-\ on DeskEdit version 1.02, or Ctrl-£ on later versions.

DESKEDIT AND THE RISC USER BACKDROP

Although there is no conflict between these programs, when DeskEdit has input focus, it prevents the hotkeys F10 and F11 from reaching the Backdrop, because it makes use of the keys itself. This means that the very useful "bring BackDrop to the front" feature cannot be used when DeskEdit has the input focus. To remedy this, a new version of the BackDrop - called *SuperBD* appears on the Volume 4 Special Disc. This uses Ctrl-F11 and Ctrl-Shift-F11, which are not used by DeskEdit.

THE CLIPBOARD

This is very handy for moving around a document (or program source), and collecting a number of separate lines that you want to copy elsewhere. Of course if you just want to copy a block from one place to another, that is easy - just mark it and then use Ctrl-C (or Ctrl-B to copy then clear the marks).

But if you are collecting lines from a number of different locations, the clipboard is invaluable. Just use Ctrl-Shift-M to mark one or more lines, then Ctrl-Shift-Z to append them to the clipboard, and repeat the process until you have collected all you need. Finally Ctrl-Shift-C will copy the whole collection from the clipboard to the caret. Users unfamiliar with the keyboard shortcuts can mark with the mouse, and control the clipboard from the menu.

TEXT FOR IMPRESSION AND OVATION

Both Impression and Ovation allow text to be imported from standard text files, and DeskEdit has a special option for saving text in a suitable format. This is achieved using Ctrl-F3 or Ctrl-Shift-F3 instead of the usual F3 to save a document.

Ctrl-F3 adjusts line and paragraph endings, removes printer control codes and hides text hidden with the "hide" character. Ctrl-Shift-F3 additionally converts all multiple spaces into the Tab character (ASCII 9). This is correctly read by both Ovation and Impression as a Tab character.

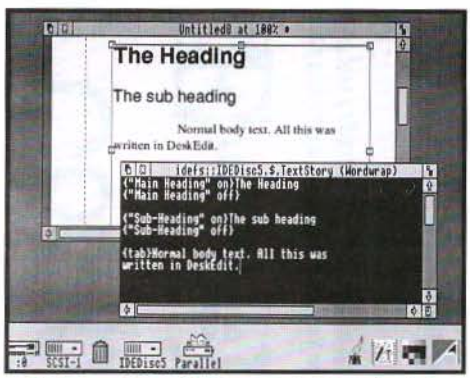
HANDLING IMPRESSION PRINTER CODES

If you are using DeskEdit to prepare a document for use with Impression, you can enter Impression style codes by installing them into a number of DeskEdit macros (see figure). For example, the following two will turn on and off *Main heading* style:

```
{"Main Heading" on}
{"Main Heading" off}
```

See Impression documentation for details of how to set up other styles, or use Impression's *Save text story* option, and examine the way in which the style information is handled. Note that you only need the extensive header

information saved with such files if you want to alter the defaults. When saving DeskEdit files for Impression, remember to use DeskEdit's special save option, activated with Ctrl-Shift-F3. Then either drag the saved file into an Impression frame, or onto Impression's icon bar icon.



Macros can be used to insert style information into DeskEdit documents destined for Impression

QUICK-SEARCH FOR EDITING

If you are in the habit of printing out documents that you are preparing, and checking the text in printed form, and then editing it on the Arc according to your marked up version, you can save a lot of time by using DeskEdit's *Quick search* option.

Simply move to the top of text, and use Quick search to find the part you want to edit, edit it by hand (rather than using a Replace option), and then search for the next. You can usually find any given place in a document by entering just a couple of characters into the Quick search dialogue box. For example, if you are looking for:

```
he brought
```

just search for "hg"

Alternatively, using a letter from the end of one word, and one from the start of the next can tie down a spot very effectively. For example, if you are searching for:

```
this is the only thing that
```

simply search for "y t" or "ly t". This should prove to be a reasonably unique combination - and in any case, if you work through your document from start to finish, each new target will probably be not far from the last.

SAVING TREES

DeskEdit's Preview mode should save large quantities of wasted paper by allowing you to see exactly what your text will look like before it is printed - complete with headers, footers, page numbers etc. But if you have printed a copy of a document which has one or two small mistakes only, you can often get away with reprinting only the pages containing the errors. Simply use the Hardcopy dialogue box to alter the range of pages to be printed.

LAUNCHING TASKS AT A KEYSTROKE

DeskEdit's User commands feature allows you to create a menu of frequently used commands to be run from the icon bar menu. This can be handy for example for installing (and later removing) a printer driver.

But you can also launch other tasks at a keypress using this feature, because the first ten items on the User commands menu have a keyboard shortcut. The right-hand Ctrl key in combination with the numeric keypad zero will execute the first of the user commands. With numeric keypad one, the second will be executed, and so on. So for example, (Right) Ctrl- (Keypad) 0 could install your printer driver, and so on.

CONTROL CODES IN MACROS

Control codes can be inserted into macros by using the Alt key in conjunction with the numeric keypad. For example, to insert the "hide" character into macro 1, put up the macro 1 dialogue box, then hold down the Alt key, and type 133 at the numeric keypad, and then release the Alt key.

NEW PARAGRAPH IN A MACRO

The following sequence (without the quotation marks) can be used in a macro to generate a new paragraph made up of two new line characters followed by four spaces:

```
"<|><|>  "
```

RU

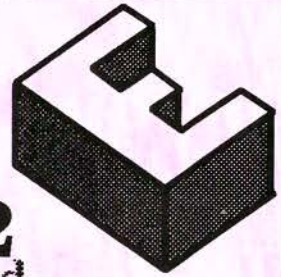
DeskEdit Enhancements

A new version of DeskEdit has been produced containing a number of minor improvements, including the following:

1. Improved control of word wrapping
2. Single key "centre-text" and "right-align-text" controls.
3. Text format width is more easily accessible, and is saved with Page setup details.
4. The number of spaces used with Auto-indent is now specifiable.
5. Improved handling of Basic programs.
6. Single-key Save-and-run for Basic

This new version is being supplied with all new orders, but if you have the earlier version (1.02), you may obtain an upgrade by sending us your old disc with return post and packing, plus a £2 handling fee.

Ace Computing



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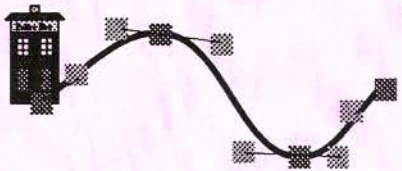


"Any discussion of design with the Archimedes must include what has virtually become the standard 3D graphics and animation system.

I mean of course the *Euclid/Mogul/Splice* trio of packages from Ace Computing. *Euclid* is a Risc OS compliant, interactive, multi-document, 3D, graphics and animation program which is so easy to get to grips with.

Designs can be put together, rotated in real time, zoomed in and out of and viewed in perspective from any position...

...It is interesting to note that the next set of BBC TV's *Science Challenge* programmes employ *Euclid* graphics."

CHRIS DRAGE Education section
BBC ACORN USER February 1991

Ace Computing

The 80 Column

This month Alan Wrigley delves into the murky waters of international character sets.

Printing non-English characters from an Archimedes can be a headache. If you are using outline fonts, then things are not too bad, since the RISC OS printer drivers will simply translate the characters drawn on the screen into graphic data, which will be sent to the printer in bit-image mode (or in the case of PostScript, as a PostScript file). In other words, what you get is effectively a screendump from your document, and if the outline font you are using has foreign characters, these will appear on the printout exactly as on screen.

When it comes to text printing, however, things really start to get complicated. Among so-called Epson-compatible printers, there are at least 3 common methods of handling international characters, and to make matters worse, none of these corresponds exactly to the method used on the Arc.

The Arc itself supports a number of ISO standard alphabets, and maps the non-English characters to ASCII codes 160-255. This article will restrict itself to the Latin1 alphabet (ISO 8859 alphabet 1), since you will not find many printers which support the others.

Among printers, the Epson FX80 standard is very common. This does not use characters above ASCII 127, but instead allows for a number of the characters in the standard set to be switched between various languages, so that the same ASCII code may produce different characters depending on which language is currently selected. This is a very simple method but does not allow the full Latin1 character set to be printed.

Another very common method is to provide an alternative set of characters based on the IBM character set. This includes various symbols and graphic building blocks as well as foreign characters. The set is sometimes referred to as "Code Page 437". It is normally necessary to set the printer explicitly to IBM mode, after which the characters are available as ASCII 128-255. Like the Epson FX80 method, this does not provide all the characters supported by the Arc.

The third, and most comprehensive method implements the full ISO 8859 set, and is referred to as "Code Page 850". All the characters available on the Arc are also available on the printer - but before you get too excited, they are all mapped to different ASCII codes! Nevertheless, this does at least allow you to print out the entire set, provided that some means of code translation can be found.

This is where the release 2 RISC OS printer drivers come in. Acorn has sensibly provided just such a facility, which enables you to intercept any ASCII code and replace it with any other code, or string of codes, of your choice. This is done by inserting lines into the *PrData* file beginning with *text_charnnn:* where nnn is the character code to be intercepted. This is then followed by the code(s) you wish to replace it with, in the usual GSTrans format. For example, to print a German umlauted A (Arc character 196) on an FX80, you need to set the German language with ESC "R" 2, followed by character 91 which produces the umlauted A, then ESC "R" 3 to reset the language to UK. So the line in the PrData file would read:

```
text_char196:  <27>"R"<2><91><27>"R"<3>
```

Further details on how to do this are included in the Help file which accompanies the printer driver. To make sense of your own printer's method of handling international characters, you will need to study the printer manual carefully.

On this month's magazine disc you will find 3 text files which contain the necessary lines for the PrData file for the Epson FX80, Star LC series (Code Page 437) and Canon BubbleJet (Code Page 850). You should be able to modify these files for other printers. RU

Using ANSI C

Part 7: Saving files

by Lee Calcraft

We leave the subject of dialogue boxes this month to embark upon file saving. Whereas in Basic it takes many lines of code to implement a Desktop save operation using a standard *Save as:* dialogue box, in C, thanks to some very useful RISC_OSLib functions, it only takes a few lines.

To demonstrate it fully, we will modify our C_Demo program so that it provides a *Save* option operated from the icon bar menu. The easiest place to put this new option is in the middle entry of the *Test* submenu, since this is not used for any other purpose. To achieve this, simply alter the two references to *i_tsubmenu_opt2* (at the start of the program, and in the menu handler) to:

```
i_tsubmenu_save
```

Then alter the *SUBMENU_ITEMS* macro to read:

```
#define SUBMENU_ITEMS\
            "!Test1|>Save,>Search:"
```

If you recompile the program at this point, and run it, you should see that you now have a *Save* entry in the *Test* submenu, but that selecting it has no effect.

To make it do something, you will need to add a line to the corresponding case statement, so that it reads:

```
case i_tsubmenu_save:
  saveas(0xfff,save_name,save_proc,\
    0,0,0);
  break;
```

The function *saveas()* will display a *Saveas:* dialogue box, handle Wimp drag events and the elaborate message protocol associated with saving files on the Desktop.

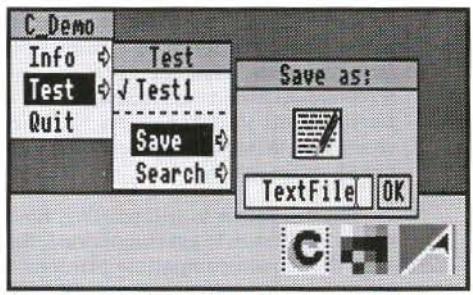
To keep your compiler happy, you should add the following #includes:

```
#include "saveas.h"
#include "os.h"
```

The function *saveas()* has six parameters. The first is the filetype (used for determining which sprite should appear in the dialogue box), while the second is a pointer to the filename to be supplied in the dialogue box. In our program this needs to be set up early in the source as a global variable using a line something like the following:

```
char save_name[256]="TextFile";
```

Note that we have supplied a default name, and that even if you wish the name field in the *Save as:* box to be blank initially, you should initialise *save_name* as a null string (of the same length), or there will be trouble!



Implementing a Save box is easy using RISC_OSLib

The next three parameters supply the names (or more properly the addresses) of user supplied functions. The first is for normal saves, the second for RAM transfers, and the third for drags to a printer driver. In the first instance we will be supplying just one function *save_proc()* for normal file transfer. Supplying a zero in place of the second tells *saveas()* that RAM transfer is not supported, while a null printer function implies that no special facilities are provided for printing this filetype, and that the driver should handle the file as best it can. Since in our current example we are using a filetype of 0xfff, the normal text printing features of the driver will be used.

The sixth parameter is a pointer to void which can be used to pass any required value to our own function *save_proc()*. For example in an editor it could be used to indicate which object the user was saving. But in this simple program we do not need to use it, and so we again use a zero here.

Of course, before the program will work, we need to define *save_proc()*. But this is a relatively easy task, because all the hard work has been done for us. All we need to do is to save the data of our choice to the filename supplied to us.

The accompanying listing provides a workable function. It takes the following prototype:

```
static BOOL save_proc(char *filename,\
  void *handle);
```

which should be included early in your source. There is no choice in the type and number of parameters which *save_proc()* takes and returns. This is defined in RISC_OSLib, and if you get this wrong, your source will refuse to compile.

There are just two final things to do before you can compile and run the revised version of C_Demo. The first is to provide something to save. The following line declaring the global character array *text_file* will do the trick.

```
char text_file[256]=\
    "just a piece of text\n";
```

This should be placed with the other globals early in your source.

```
static BOOL save_proc(char *filename,\
  void *handle)
{
  os_filestr osf;

  osf.action=10;
  osf.name=filename;
  osf.loadaddr=0xfff;
  osf.start=(int) text_file;
  osf.end=osf.start+strlen(text_file);

  if (wimpt_complain(os_file(&osf)))
    return FALSE;

  return TRUE;
}
```

The save_proc() function

Finally, the *Saveas* function requires a suitable template named *xfer_send*, and you can borrow Edit's for the purpose, taking care to save the final merged templates file to the !C_Demo directory rather than back into Edit. C_Demo should now compile correctly, and when the application is run you should be able to use the *Save* option on the *Test* submenu to drag the text file either to a Filer window or to a printer driver icon, when it should be printed out as a plain text file. Note however that the name used for the save will not be updated after the save, because we have not yet implemented this feature.

save_proc() EXPLAINED

The function *save_proc()* is automatically called by the *saveas()* function once the user has dragged the icon of the file-to-be-saved to an application which responds to its presence. It is passed a pointer to the filename to be used for the save, together with the pointer to void which we have set to zero. To avoid a compiler warning about the unused handle, you can use an additional statement of the form:

```
handle=handle;
```

But note that on version four, the default flag setting makes this unnecessary.

As it stands, *save_proc()* simply uses *OS_File 10* to save the text file from *text_file* in RAM, using the function *os_file()*. This in turn makes use of the os_filestr structure. For a definition of this see the file *os.h* in RISC_OSLib. One less than obvious trick is that you need to set *osf.loadaddr* to the required filetype to be used for the save, whereas its name suggests a load address (used when loading files with *os_file()*). And note also that we do not copy the filename into *osf.name*, we merely equate pointers.

ERROR HANDLING

Like many RISC_OSLib functions, *os_file()* does little more than call the corresponding SWI, and it does so using the X form. This means that the majority of RISC_OSLib functions do not handle errors in any way, but merely pass them on - so it is essential that they are trapped within your C code. One way to achieve this is illustrated here. Like most RISC_OSLib functions which do not handle their own errors, *os_file()* returns a pointer to the error structure *os_error* if an error occurs, or NULL if all is well.

In *save_proc()* we have wrapped up the call to *os_file()* using the function *wimpt_complain()*. If *os_file()* returns a non-NULL pointer, this very useful function reports the error to the user in a standard error box, using the message held in the *os_error* structure returned by *os_file()*.

wimpt_complain() also passes on the pointer to the *os_error* structure, so we can test the value of this, and exit from our function if an error has occurred. All this is achieved in a single line of code. It is important to note that using a function such as *wimpt_complain()* does not result in a program jump of any kind. C is not like Basic in this respect: after the error has been handled, you are simply on the line following the call to *wimpt_complain()*.

Next month we will add a line of code to update the filename after a safe save, and then take a look at RAM transfers. RU

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Into the Arc

Filetypes and Date Stamps

Alan Wrigley looks at the way in which RISC OS makes use of two valuable pieces of information stored with files.

When you save a file on the Archimedes, whichever filing system you are using, some additional information is stored along with the file. Obviously this will contain the exact location of the file on the disc or other filing medium, so that the file can be accessed again. But a number of other items of information are also stored, and two of the most useful are the filetype and date stamp.

FILETYPES

A filetype takes the form of a 3-digit hex number, for example &AF1. Each filetype may also have a name, for example "DrawFile", "Utility" or "Template". There are filetypes for many different types of file, such as text files, sprite files, Draw files, Basic programs and so on. The more common ones have been defined by Acorn, but any application can define its own filetypes, subject to approval from Acorn which controls the use of filetypes quite strictly, both to prevent duplication and because there is only a finite range of numbers available. Each filetype may also have its own sprite to represent files of that type in directory viewers, which we will look at in more detail later.

WHY FILETYPES?

First of all we need to consider why filetypes are so important, and what they are used for. RISC OS itself cannot determine the meaning of a file's contents. To the operating system, a file is merely a string of bytes, irrespective of what those bytes represent. So immediately we can see that a system by which an application can recognise certain types of file is an asset. For example, a program which handles Draw files can reject any other types and avoid having to try to process files which are not suitable for the task in hand.

But there is much more to filetypes than this. The most important aspect is that the run action and print action can be specified for any filetype - in other words, the operating system can be told in advance what to do if the user double-clicks on a file of any particular type, or if he drags it to a RISC OS printer driver. This makes possible one of the most powerful features of RISC OS: simply double-clicking on a file in a directory viewer can load that file into an application, and even install the application itself if it is not already there.

Secondly, as we have mentioned, each filetype may have its own unique icon which will represent files of that type in directory viewers. This means that you can see at a glance which are your text files, your Draw files and so on. When you open a directory viewer on the Desktop, you are faced with a window full of (usually) multi-coloured icons. Some of these may be applications, some may be plain directories, and others may be files. Plain directories are easy to spot - they look just like folders. But applications and files are likely to be represented by a wide variety of icons. Application directories always start with a "!" character, and normally have their own tailor-made sprite which is designed to illustrate the purpose of the application; as a result these are usually unique to each application. Files, on the other hand, are represented by a sprite which indicates the filetype.

Figure 1 shows a number of these icons, many of which you will recognise. The sprites for these icons will normally come from one of two places. Sprites for the most

common filetypes (for example, text files, sprite files and Basic programs) have been predefined and placed in ROM, so these will automatically be available as soon as the computer is started up. Other filetypes usually relate to specific applications; for example there are filetypes for Ovation documents, ArcScan files etc. In this case, the application itself notifies the operating system of the filetype, together with its run and print actions, when it is first seen by the Filer. It will also tell RISC OS where to find the sprite that represents the filetype.

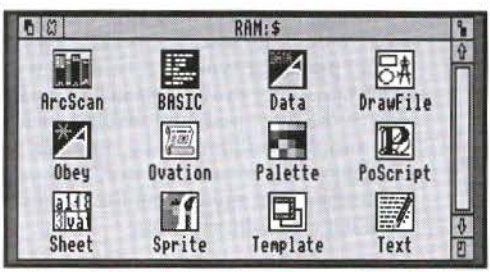

Figure 1. A number of filetypes together with the icons used to represent them

Until a sprite has been notified to the operating system in this way, any files of that type are shown as a plain white square with a black border. This same icon is also used for any files which do not have a type. You can see this in action, and also what happens when an application defines the sprite, by performing the following test. We will use Draw for the example, since Draw files are not pre-defined like text and sprite files.

First reset the computer and then open a directory viewer containing Draw files. Make sure you do this *before* you open a viewer containing Draw. You will see that the icons for these files are plain white squares. Now open a viewer containing Draw, and then close and re-open the viewer containing the files. You will see that they are now represented by the Draw file icon. What happens is that when an application is first seen in a directory viewer, its !Boot file is run if there is one. This file will contain commands which make RISC OS aware of the sprite, and also set the run and print actions for the filetype.

RUN AND PRINT ACTIONS

We have mentioned that applications can, indeed should, set the run action, and if necessary the print action, for any filetypes which they own. This is done by the use of system variables. When the user double-clicks on a file, RISC OS looks for a system variable called *Alias$@RunType_nnn*, where *nnn* is the filetype number in hex. A similar system variable, *Alias$@PrintType_nnn*, is looked for if a file is dragged to a RISC OS printer driver. In this way an application can make sure that it controls what happens when these actions are performed on files which it has a legitimate claim to own. A third variable, *File$Type_nnn* defines the name for that filetype. It is not essential to set any of these variables, although since the main purpose of separate filetypes is to allow the run action to be specified, you will normally find that this variable at least will be set.

You can see at any time what filetypes are currently recognised by the operating system by pressing F12 to get to the command line, and typing **Show* (pressing Shift if necessary to scroll the display). Among the list of variables displayed will be a number of run-type and print-type aliases as described above, each one showing the command which will be executed when the relevant action is performed. This will normally be a command to run the application which owns the filetype. You can also see all the filetypes which have a *File$Type_nnn* entry (a fourth variable, *Alias$@LoadType_nnn*, specifies the action to be taken if a **Load* command is performed on a file, but this is now obsolete under the Desktop).

SETTING FILETYPES

We saw earlier that RISC OS cannot determine the meaning of a file's contents. It

follows, therefore, that for a file to acquire a filetype, it must be set by an external agent. This is normally the application which saves the file in the first place. For example, Draw will always save files with the DrawFile filetype, and Basic will always save programs as type BASIC. However, there are often circumstances where a user might wish to alter the filetype, or to type an untyped file. A command is provided for this purpose:

```
*SetType <filename> nnn
```

where *nnn* is the filetype in hex. A much easier way is to use a filetype-setting application such as RISC User's *SetType* (Volume 3 Issue 3) or *Filer+* (Volume 4 Issue 5 and also on this month's magazine disc).

Why might you want to alter a filetype? One reason might be to disguise files as a protection against viruses (see *Simple Virus Protection*, Volume 5 Issue 1). Another example is a file created by using OPENOUT from Basic. This will automatically be created with a Data filetype (unless there was an existing file of the same name, when it will take the original type), but you might want the file to have a different type depending on the use to which it will be put.

Before we leave filetypes, it is worth knowing that applications and directories also have a type (&2000 and &1000 respectively), while untyped files are given the number &3000. This means that a task can discover whether an object dragged to it is a directory or application, but it is not possible to alter the default run action for these.

DATE STAMPS

Another useful piece of information stored in the catalogue is the file's date stamp. This holds the time at which the file was created or last modified. You can see a file's date stamp by clicking Menu over a Filer window and choosing *Full info* from the *Display* submenu. This displays the date, and the time in hours, minutes and seconds.

Date stamps can be very useful indeed. For example, suppose that you are working on a substantial document and have saved several versions with different names as the work progressed. One morning you forget which is the latest version - a quick look at the date stamp will reveal all, and avoid the need to examine all the files one by one. Again, you may find that you have two different versions of a program in two different directories - which is the more recent, or are they both identical? And you may want to know whether you have modified a program since it was last backed up. The date stamp will help you again - with one important proviso.

When you copy files, by default the date stamp on the copy is the same as the original. However, it is possible to set a copy option (the S option for *Stamp*) which will set the date stamp to the time of copying. This means that you cannot rely on the date stamp to tell you whether two files are identical, though in practice it will be unless you have specifically turned the S option on. For more information on copy options, see the User Guide pp. 202-204, and also *Into the Arc* (Volume 4 Issue 6).

Another copy option which makes use of the date stamp is N (for *Newer*). If this is on, then an existing file of the same name will only be overwritten if its date stamp is earlier than the file being copied. This ensures that you cannot overwrite your latest work by mistake, and also means that when copying large numbers of files, any which have not been modified do not need to be copied. Hard disc backup utilities make use of this facility for incremental backups.

Other information stored in the catalogue details a file's attributes (for example its access status), and different filing systems may store additional pieces of information. But the two described in this article are by far the most important in terms of RISC OS functionality. RU

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C Notebook

Compiled and Linked by Lee Calcraft

IRREVERSIBLE OPENING

Graham Jones

If you use the function *fopen()* to open a file for writing, this will return a null pointer if the target file is locked. This is as it should be, but CLib also *opens* the file. This is very inconvenient, because there is no simple way to close it again. You obviously cannot call *fclose()* since you have no file pointer to use as an argument (since NULL was returned).

To try this, use the following program:

```
#include <stdio.h>
#include <stdlib.h>

void main(void)
{
  FILE *fp;
  fp=fopen(testfile",*w");
  if (!fp)
    {printf("fail\n"); exit(1);}
  fclose(fp);
}
```

Running the program will create an empty file "testfile". Now lock it, and re-run the program. The operation will now fail, the file will be left open, and its date stamp will be updated (even on CLib 3.75). To check that it is indeed locked, load it into Edit, then try to save it.

READING ABSENT FILES

Graham Jones

Another problem arises with *fopen()* if you open a file for reading on a floppy. If the Filer has seen the file, then *fopen()* will return a non-NULL pointer, even if the disc is not present. When a read operation such as *fgetc()* is used, the filing system issues a "Please insert disc 'xxx'" message. But if the user clicks on *Cancel* rather than inserting the disc, *fgetc()* still returns a value - as of course it must.

In fact it returns 255, and you may well take this to be genuine data - especially since further calls to *fgetc()* do not put up the "Please insert ..." message again, but just return 255s. The way to cope with the situation is to make a call to *ferror()* after each disc read. This is recommended practice in any case, and should be sufficient to avoid similar problems.

SHIFTY LOGIC

Lee Calcraft

You need to take care when using the shift operators << and >>, because it is easy to get their priority wrong. In the following:

```
res=first + second<<2
```

one might reasonably expect the shift operation to be applied to the variable *second* before the addition takes place: not so! The effect of the above statement is the same as:

```
res=(first + second)<<2
```

The official order of play is as follows, with operators of equal priority on the same line (these will be evaluated in an unspecified order). Note that in line two, the "+" and "-" are unary, and the "*" and "&" are associated with indirection and addressing rather than multiply and logical AND.

```
Highest   ( ) [ ] -> .
          ! ~ ++ -- + - * & (type) sizeof
          * / %
          + -
          << >>
          < <= > >=
          == !=
          &
          ^
          |
          &&
          ||
          ?:
          = += -= *= /= %= &= ^= |= <<= >>=
Lowest    ,
```

ASM FLAGS

Ken Chambers

If you are using ObjAsm to create some linkable ARM code for a C program, and are driving your linker either from an Obey file or from a non-DDE Make file, you can easily get stuck in the assembler each time you link with new code.

To avoid having to type Quit, and to set the datestamp of the resultant object file each time, you can use the following ObjAsm flags:

```
-quit -stamp -closeexec
```

Please send us your C hints - all published hints will be paid for. RU

Hints & Tips. . . Hints & Tips

Hints and Tips on almost any subject relating to the Archimedes/A3000/A5000 series are always welcome. All published hints are paid for.

RISC OS 3 INKEY VALUE

Sheridan Williams

The simplest way of telling which operating system a program is running under is to check the value of INKEY(-256). The values for the various operating systems are as follows:

Arthur 1.2	160 (old A300s,A440)
RISC OS 2.00	161 (A400/1s,A3000)
RISC OS 2.01	162 (A540)
RISC OS 3.00	163 (A5000)

To try it out, use:

```
PRINT INKEY(-256)
```

DrawTools ROTATION

Ken Cowap

DrawTools allows its objects' centres to be precisely locked onto Draw's grid. However, when a DrawTool object is rotated (for instance to rotate a pentagon so the top face is horizontal) using the Rotate option from Draw's Select menu, the centre is shifted by an odd fraction of the grid size, which can't be corrected with Draw. The solution is to draw a circle round the object to be rotated (using DrawTools with a 360 degree arc and the same centre), then group the circle and object, and then rotate by the required angle; then ungroup and delete the circle. The circle constrains the rotation to be about the object's centre, so that the object is correctly rotated.

THE PC EMULATOR AND THE BREAK KEY

Martyn Fox

The correct way to exit from the new PC Emulator (version 1.6 onwards) when it is single tasking is by clicking the Menu button on the mouse. However you cannot use this method if you are using the PCEmS version (for 1Mb machines) and you have configured the emulator to *Erase RISC OS*. The only way out then is to use the Reset button. The snag with doing this is that then the Break key does not work; the emulator has disabled it, and the condition appears to survive a hard reset, requiring a power up to correct it. The solution is to type:

```
*FX 247,1
```

after the Reset, which will set the Break key to its default configuration.

ALT KEY COMBINATIONS

Andrew Cumming

The WP/DTP column in RISC User Volume 4 Issue 9 described the use of the Alt key in combination with the numeric keypad when entering non-keyboard characters (e.g. the degree symbol can be entered by typing 176 on the keypad whilst holding down Alt). However, the Alt key can be used with certain other keys on the keyboard to enter the more commonly used non-keyboard characters. These sequences are shorter and easier to remember (e.g. Alt-C for the American cent symbol). The complete list for the Latin 1 alphabet in RISC OS 2 is:

Alt-1	gives	π	Alt-S	gives	ß
Alt-2	"	≤	Alt-.	"	~
Alt-3	"	≥	Alt-,	"	◊
Alt-9	"	±	Alt-Z	"	'
Alt-0	"	∞	Alt-X	"	ª
Alt-Y	"	•	Alt-C	"	¢
Alt-R	"	Æ	Alt-M	"	µ

WIMP TICK TOGGLING

John Banks

In Technical Queries (RISC User Volume 4 Issue 10) a procedure for setting the tick state and shaded state of a menu entry was published. However, quite often the state of a ticked item needs to be toggled (i.e. unticked if already ticked, or ticked if already unticked). The procedure **PROCtick** below takes a menu block (*mblock%*), a menu item number (*item%*) and an action flag (*action%*) as arguments. If action% is -1, then the tick state is toggled, otherwise the item is ticked (if *action%*=1) or unticked (if *action%*=0).

```
10 DEF PROCtick(mblock%,item%,action%)
20 byte%=mblock%+28+24*item%
30 CASE action% OF
40 WHEN -1:?byte%=?byte% EOR 1
50 WHEN  0:?byte%=?byte% AND &FE
60 WHEN  1:?byte%=?byte% OR 1
70 ENDCASE
80 ENDPROC
```

Elsewhere in the code, if you need to decide to perform (or not to perform) some action depending on whether item number *item%* is ticked, the following conditional can be used:

```
byte%=mblock%+28+24*item%
IF byte% AND 1 THEN
  REM action when ticked...
ELSE
  REM action when not ticked...
ENDIF
```

CLOSE WITH ADJUST

Mark Moxon

Many people know that clicking on a Filer window's Close icon with Adjust closes the window and opens up the parent directory. However, what is often not realised is that clicking Adjust on the Close icon of an editor's window (such as Edit, Draw, DeskEdit and Source Edit) closes the window and opens up the directory viewer containing the file that was being edited and, similarly, clicking Adjust on the Close icon whilst holding down Shift opens the relevant directory viewer, but does not close the window.

QUOTING IMPRESSION

Richard Grant

Impression II has the option, via the Preferences menu, to set smart quotes, which means that quotation marks curl in the right direction depending on whether they are opening or closing the quote; however, this ability is not available as you type text in. A way round this is to save your text as an ASCII file (either by using Impression's Shift-Ctrl-T save box with "With Styles" switched off, or by using a text editor to edit your text) and then to import the text back into Impression. As the text is read in, the quotes are converted to the open and close variety automatically, but it is worth checking to see that it has worked afterwards.

BASIC EDITOR FUNCTION KEYS

Ivor Clarke

On pages 394 onwards of the BBC Basic User Guide there is a list of the function keys that can be used from within the Basic Editor. However, the list does not detail three Control key combinations - instead they are marked as "Reserved". The details of the keys (which appear on the function key strip) are:

Ctrl-F4	Split view into two windows
Ctrl-F2	Swap between these two windows
Ctrl-F5	Display help on function keys, cursor keys and line commands
Ctrl-F6	Display information on the currently loaded Basic program

NULL DUSTBIN

Gavin Wraith

If you press F12 and enter:

```
Filer_OpenDir null:
```

and press Return twice then a *null:* window opens up on the Desktop. This can be very handy for deleting files and directories, even if they are locked or contain locked files. Simply move the files into the *null:* window, by dragging them whilst holding down Shift. The reason this works is that the *null:* device swallows all input, and holding down Shift deletes the originals when the copy is complete. The *null:* window is a dangerous window to have open all the time, but it can be a lot quicker than finding a locked file which is way down the directory tree.

WATCHDOG OPTIONS

Lee Calcraft

When saving the protection and allowed pathname settings from within Watchdog (using *Save Options*), then if protection is set to *Total* or *Read/Write*, the settings cannot be saved because the disc is protected. A way around this is to drag the !Options file (which is in the !Watchdog directory) into a text editor like Edit, and alter the first byte to one of the following:

[00]	None
[01]	Partial
[02]	Total
[03]	Read/Write

To enter the code [02] (for example), hold down the Alt key and press "2" on the numerical keypad.

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Ctrl F steps through all function references

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Technical Queries ??

Alan Wrigley answers more of your questions

Dear Sir
Is there any difference between quitting a task from its icon bar menu and quitting it from the Task Manager's Tasks window, and if so, how should my program handle the two different methods?

R.D. Khan

Any difference in these two actions will be entirely down to the task itself. When you choose a menu option from a task's menu, this action is passed to the task as a menu selection event (Wimp_Poll reason code 9). The operating system has no idea of the significance of the choice - it merely tells the task that a particular option from the currently open menu has been chosen. If this happens to be the *Quit* option, the task must then decide what actions to perform, just as with any other menu selection. In the case of *Quit*, the task may want to see if any data should be saved or files closed, for example, and will then call Wimp_CloseDown.

However, if you quit a task from the Tasks window, the Wimp interprets this explicitly as a request to quit, and sends appropriate messages to the task. First it sends a pre-quit message (code 8), upon which the task should do anything which needs to be done before quitting (for example asking the user if he wishes to save a modified data file). Having responded to the pre-quit message, the task will then receive a quit message from the Wimp, whereupon it must tidy up and call Wimp_CloseDown immediately without any objections.

There is a third way of quitting a task, and herein lies a potential problem. Pressing Ctrl-Shift-F12 signals to the Task Manager that you wish to shut down the entire Desktop, and as a result all active tasks will be sent a pre-quit message. They may choose to ignore it if nothing needs to be done, or they may wish to offer the user a data save option. If the user then chooses to discard the data and quit anyway, the entire closedown sequence must be restarted by simulating a key pressed event (Ctrl-Shift-F12) and sending this back to the Task Manager. This is described in the PRM on page 1255.

The problem arises because the Wimp sends the same pre-quit message to the task whether *Quit* has been selected from the Tasks window, or whether Ctrl-Shift-F12 has been pressed. This means that if applications follow Acorn's guidelines, they will re-initiate the Desktop closedown sequence in both cases if it so happens that the user does not want to keep the file. Thus it is possible to quit a task from the Tasks window, choose to discard a modified file when prompted for a save, and find that the Desktop has disappeared along with any other applications which may have been active at the time, with the possible loss of valuable data if they do not respond correctly. This was highlighted in *Hints & Tips* (Volume 3 Issue 10).

Acorn has been aware of this problem for some time, and it does not occur with the new versions of the application suite provided with RISC OS 3. However, older versions of the applications running under RISC OS 3 will still suffer from the problem, since they are unaware of the difference between the two methods of quitting.

Dear Sir
Your DrawFont application is very useful but I find it annoying that it refuses to install if I have an earlier shared C library already active, giving me instead an error which reads "Old C library installed". Why can it not simply load the required version of the C library, which is supplied anyway on the same disc?

William Brown

When an application which has been written in C is installed, pointers are set up to functions in the C library. If a subsequent program simply loads a new library, any C programs already running are quite likely to crash, because they will be expecting to find routines at the locations indicated by their pointers, and this may not be the case in a different version of the C library. The way DrawFont handles this is perfectly correct. If you are writing your own C applications, you should incorporate something along the following lines into the !Run file:

```
Set clib$flag 1
RMEnsure SharedCLibrary 0 Set clib$flag 0
RMEnsure SharedCLibrary 3.75 If "<clib$fl
ag>" = "1" Then Error 0 Old C library installe
d Else RMLoad System:Modules.Clib
RMEnsure SharedCLibrary 3.75 Error You need
Clib 3.75 or later
Unset clib$flag
```

What this does is to set a flag, then check whether any C library is installed. If there is none, the flag is reset. Next it checks for the specific version (or later) of the library required. If this is not there, and the flag is set, it means there must be an old version installed and so the error is generated. If the flag is not set, the C library is loaded from the currently specified system path, and a further check made to ensure that the version number is high enough. Finally the flag is unset. The version number (3.75 in the example here) must be the version of the C library that was used to compile the !RunImage program.

RU

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DRAWING AND ART

PD15 Disc Arctist+ and BigM, both 256 colour art packages, along with Design, a symmetrical pattern designer.

PD41 Disc 4 applications: 'Display' allows the display of Draw files by dragging them into a window. 'Drawplus' is an object oriented drawing package that may be used as an alternative to Acorn's Draw supplied with your Archimedes or A3000. Drawplus has many enhancements over Draw. 'Drawstrip' is a program to enable the easy creation of function keystrips using Draw. 'Drop' enables Draw files to be rotated in 3D and then saved again in their new perspective.

EDUCATION

PD14 Disc !REG, a student register system which replaces classroom registers. A system for managing the recording and reporting required by the National Curriculum and data files for Pipedream for NC statements of attainment in science.

MUSIC

PD01 Disc Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03 Disc Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

PD04 Disc Soundtracker playroutine plus the following tunes: Doc1, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc Soundtracker playroutine plus these tunes: Jazzid, Jmj_China; LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD07 Disc Soundtracker playroutine plus these tunes: MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat, PetShop, Pretend, SaySaySay2, Steeve

PD16 Disc 230 tunes for loading into the music package Maestro, variety enough to suit most tastes.

PD08 Disc Soundtracker playroutine plus these tunes: Setrox, Tarzan, TGM, TheModel2, TjatMikes, Toccata, Unit, Vprtex, We're, Yezz.

PD09 Disc Soundtracker playroutine plus these tunes: Acid_House, Bananas, Cambod, Crok, Cute, Dallas, Deadlock, Dragnet, Yazoo.

PD10 Disc Soundtracker playroutine plus the following tunes: DemoSmash, FFSound, Five, GSCTheme, HiEnergy, Oxygene2, Piano, PopCorn, PumpUp.

PD11 Disc Soundtracker playroutine plus the following tunes: Rescue, Rockit, Round,Scratch, Scratch2, Show, SmokeOn.

PD40 Disc The Jukebox playroutine plus the following Tracker tunes: Acid House, TeddyBears, Canon, Breathe, Six2, Rag It.

PD43 Disc An application called Coconiser, very similar to Tracker, that allows the creation of tunes by sequencing digitally sampled sounds. Demo tunes are included on the disc.

PD46 Disc The Jukebox playroutine plus the following Tracker tunes: Beginning, Blue Peter, Frog Song, IcelceBaby, Monty Mix, Over The Bow, Rawhide, SkyXmasMix, Thunderbird

PD47 Disc A selection of SoundTracker and Tracker playback routines and utilities including a keyboard and spectrum analyser.

SAMPLER DISC (PDS1)

Contains the following sample programs from our Public Domain Software Library: **SoundTracker, Accounts, SC Label, Follow, Hangman, Multiprint, Rotate, STD and Wanda**

TRICKS AND NOVELTIES

PD17 Disc A collection of 27 amusing novelty programs. Some produce the weirdest effects!

PD32 Disc Contains an application called Cookie. When run, it puts up a window containing a 'fortune cookie' or a well-known saying or piece of philosophy. Be warned! Very addictive once seen, also rather zany not to mention, occasionally saucy! There are some 6000 sayings. Also on this disc is a scroll text demo with soundtrack music called Invade that also features a space invaders game within it.

UTILITIES AND APPLICATIONS

PD28 Disc 20 utilities of various types. There is something here to please everyone. Space does not permit full descriptions but the file list is, 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin, Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD_Impress, PrinterTx, ProgCalc, and Set_Type.

PD31 Disc 17 utilities and applications. Plenty on this disc to choose from and should find favour with most people. Brief description of the list is as follows: Address Book, Address Labeller, DiscSpace Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFS Disc Reader, Automatic Application Creator, Arc to Psion Transfer, ROM Speed-Up, STD Codefinder, System Utilities, Trash Can, Front end for Twin, Front end for View, Volume Controller, Control of Pointer by keys.

PD38 Disc 15 utilities and applications. These are a 1st Word Plus file converter, a 1st Word Plus printer driver for Star LC200, a text outliner application, a hypertext program (like Genesis), a CD database, a video tape database, CMOS RAM saver and loader, disc sector editor, fast formatter, font printer, file save reminder, a COPY options setter, and TEXT to DTPfile converters, plus a print spooler.

CLIPART AND PICTURES

PD29 Disc Over 4 megabytes of Sprite pictures which can be used as clip art to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them plus instructions.

PD30 Disc Over 2 megabytes of Sprite clip art and Draw files to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them together with instructions.

FONTS

PD35 Disc Eleven PD outline fonts for use in RISC OS applications such as WP and DTP. These are, Stencil, American Typewriter, Bodoni, Brushscript, Cooper Black, Fritz Quad, Garamond, Hull, London, Optima and Revue.

COMMS

PD34 Disc Arcterm3, a full comms software package. Arc100, a scrolling text terminal. Grapevine, another scrolling text terminal but multi-tasking. TaskData, a multi-tasking viewdata comms package. Download, an application for transferring files between machines via serial port.Timer, a utility for recording on-line time and call cost. The latest version of Sparkplug, the file decompression program. Also a complete set of programs for running a bulletin board system on your Archimedes.

GAMES

PD19 Disc 10 games: Adevnture, Battle, Battleships, Connect4, Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD20 Disc 12 games: Invaders, Line Of Five, Othello, Pelmanism, Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial and Yahtzee.

PD39 Disc 6 games: Pac Man (in a window!), Arc Patience, Breakout (inside an icon!!!), Creepie (Centipede), Pelmanism and International Golf (Brilliant!)

Postbag Postbag

We hope to extend our Postbag feature in future issues of RISC User, so let us hear your views and comments on all matters relating to the Archimedes. We pay for all letters published too.

SCIENTIFIC TEX

Writing scientific texts myself, I was very interested in Mike Williams' review of Equasor (see RISC User Volume 4 Issue 10). I am using Impression and Equasor too, and I can confirm most of his observations. However, writing formulae is always a tedious task, and Equasor is actually a very comfortable way to get round the difficulties involved. Although there is indeed some "fine tuning" needed in some cases, very professional results can be achieved.

However, it should be stated that Equasor is not the only approach to scientific word processing. There are two alternatives at least: the first is ***TecWriter*** *included as part of the extended version of EasiWriter from Icon Technology (see news item in RISC User Volume 4 Issue 6). The second is probably the world's most popular text formatting program,* TEX *(pronounced like 'Tech'). This program, designed by Donald Knuth, is found on a huge variety of machines, and there is one called* ***ArchiTex*** *from Tools Gmbh for the Archimedes. This is the older 2.93 version of* TEX*, but Tools expects to release a 3.0 version at the beginning of 1992.*

On the Arc, Equasor scores with its fully multi-tasking WYSIWYG concept. The output is very good, yet not as good as with TEX*. ArchiTex comes into its own when you need professional output quality and are dealing with much larger documents. In my opinion there seems to be no alternative to* TEX *within a serious scientific environment.*

Alex Bär

TEX, and its derivative LATEX, forms a vast subject on which much has been written. As Alex Bär says, it is very widely used within academic scientific publishing circles. The Archimedes version, ArchiTex, costs £120 from Tools Gmbh, Kessernicher Strasse 108, D-5300 Bonn, Germany. Icon Technology is at 9 Jarrom Street, Leicester LE 2 7DH, tel. (0533) 546225. See also this month's look at BestForm, another equation generator from a German company. My thanks also to Paul Allen who wrote extensively on the same subject.

ACORN TRIPS UP WITH PC EMULATOR

As a DR DOS user with the PC emulator, I was disappointed to be excluded from the current PC Emulator upgrade path. I phoned Acorn for information on a future upgrade for DR DOS but was honoured with the familiar "...not Acorn policy to reveal etc....". I took the plunge and bought the new MS-DOS PC Emulator, but I have to confess that I cannot discern any noticeable improvement in performance over the original.

One magazine said that this new emulator would make serious business users think about buying an Arc, instead of a PC - I really don't think so! The new emulator package is sadly lacking in MS-DOS documentation, furthering the Acorn tradition of forcing customers to pay for manuals which other software houses rightly consider to be part of the package. To rub salt into the wound Acorn has now announced a DR DOS upgrade. Why could they not have said so at the time they released the new emulator?

R.G.Sharman

The issue of upgrade paths for the new PC Emulator does seem not to have been fully thought out in advance by Acorn, though our coverage of this in the September issue of RISC User (sent out in August) did state that Acorn were definitely intending to release a DR DOS version as well (now available - see this month's news pages). However, Acorn still appear to be having some problems with this software, and it seems it might have been rushed through a little too quickly, perhaps for the sake of the A5000! However, our experiences with the new version have convinced us that the upgrade is well worthwhile both for the greater convenience of a multi-tasking version and for its extra speed. RU

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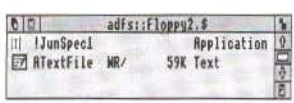

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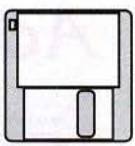

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Personal Ads

1st Word Plus issue 1, Artisan, Nevryon, Apocalypse, Powerband, Interdictor I & II, Twinworld, E-Type, Drop Ship, Chocks Away all boxed originals £110, will split. Six Archimedes World discs (about 1.4Mb software each disc) thrown in for a complete sale. Tel. (0509) 212280.

45Mb hard disc with 16 bit Oak SCSI interface £275. Tel. (0334) 78171.

Archimedes 310 colour system, Citizen Swift 24 pin printer, first word plus, monitor stand, paper and assorted PD, all boxed with manuals £700 o.n.o. also Acorn JP150 inkjet printer (brand new) £200 o.n.o. Tel. (0532) 752798 eves.

EPROMs M27128 AFI, pgm 12.5 volt SGS-Thomson brand new in anti-static strip £2 each or £25 for strip of 15. Wordwise plus Archimedes version, 3.5" disc and manual in original packaging £15, Viewstore (Acorn) for the Archimedes in original virgin packaging £15 o.n.o.Sony 3.5" disc drive with dual slot front panel for Archimedes very little use £74 o.n.o. Tel. (0234) 856070.

Archimedes A440/1 4Mb RAM, 50Mb hard disc, ARM 3 (30MHz), VIDC Enhancer, Eizo 9060S multisync monitor £1700 o.n.o, Panasonic KX-P1124 printer with 63K buffer £200, Multistore V2.0 £199. Tel. (0780) 66449 after 6pm.

Original games, Arcade Soccer, Sporting Triangles, Mad Professor Mariati, Bug Hunter/Moon dash and Archimedes World, Blowpipe Kung Fu £8 each, also Genesis database (unopened) £15. Tel. (0727) 53713.

Programmers Reference manual, unused, absolutely new, £50. Tel. (0484) 846126.

A440 4Mb 20Mb £650, Scanlight Junior £100, Colour Printing & Scanning service. Tel. (0263) 70669 for further details.

WANTED: Prolog Programming in Depth by Covington, Nute & Vellino. Tel. (0202) 893443.

Retired but still ticking over A310 owner would like to cross-fertilize through exchange of information and possibly PD, I have a fairly long list of such material. Please write to; Mr EJ Davis, 22 St Johns Close, Walsall Wood, Walsall WS9 9NH.

Canon BJ-130e Bubble jet printer, 132 column, 360x360 dpi resolution, excellent quality £350, Watford A6 Archie Hand Held Scan MKII, great for DTP work £150. Tel. (05394) 33441.

Archimedes Acorn I.O. expansion podule (1MHz Bus, User Port, A&D Port) unused £35. Tel. 081-318 5155.

ANSI C release 3 (Acorn) and TWIN windowing editor, both as new £50. Tel. (0473) 213907 home, 214769 work.

If you are interested in communications or programming in any language and have software or ideas to swop please write to me at; 12 Birnam Road, Forest Twn, Johannesburg 2193, South Africa.

A3000, Morley ST506 podule plus switched power supply, both nearly new plus 20Mb Mini Scribe, any reasonable offers. Tel. (0277) 821620 eves.

Minerva Desktop Office for Arc, original box £60. Tel. 081-536 1238 eves.

Star LC24-10 printer, with sheet feeder, almost new £230 o.n.o. Tel. (0582) 699483.

A310 colour system, RISC OS II, 4Mb memory, 40Mb hard disc, all manuals £800. Tel. 061-962 6668 eves.

Chocks Away MkII, £14, UIM £15, White Magic 1 & 2 £8 each, Hostages £10, Professor Mariarti £8, Nevryon £12, Holed Out £10, Apocalypse £15, Arcade Soccer £8 and many many more. Tel. (0392) 55605.

A3000 with 2Mb RAM & Acorn colour monitor £700 o.n.o. Tel. 081-977 9164 anytime.

WANTED: CAD software for A3000, preferably Silicon Vision's Solid CAD. Tel. (0273) 400148 eves.

A3000 MIDI/User port £30, A3000 carrying case £20, unused WD362 20Mb ST506 Internal 3.5" drive £75, WD Caviar 140 40Mb IDE internal Slimline 3.5" drive £100, Linnet external V21/23 modem with cable £55, boxed Citizen 120D+ printer with cable & ribbon £100, boxed interword ROM £15, Acorn LISP £15, Informix 4GL discs £75. Write to; Mr G Bailey, 9 Kingcup Drive, Bisley, Surrey, GU24 9HH.

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Original games for sale in boxes with manuals; Zarch £8, Holed Out £12, Nevryon £12, Chocks Away £12, Chocks Away Extra Missions £12, Pacmania £8, Orion £8, UIM £8 and 1st Word Plus release 1 £15. Tel. (0752) 896077.

Arc games, Iron Lord £12, Man Utd £14, Saloon Cars £15, Break 147 £15, Boogie Buggy £12, Twin World £12, Pipemania £14, Chocks Away 2 £14, Arcpinball £15, E-Type £10, Apocalypse £12, Inertia £8, Bug Hunter/Moon Dash £8, Bug Hunter in Space £10, Mad Prof Mariarti £12, Nevryon £12. Tel. (0277) 625613.

Acorn Desktop Assembler SKB76 (new and unused) £120. Tel. (0935) 77581.

Psion organiser Developer II original software 'The Organiser Developer' £15 o.n.o. Psion printer II four Thermal paper rolls per box 4 boxes £15 o.n.o. Psion Organiser II 'Diary Link' original software £5.

Arc Omnibus games disc £5.50. Tel. (0602) 327112 after 4.30pm.

Archway £50, Programmers Reference manual £50. Tel. (0579) 20602.

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